

Nader to Feds: Stop Microsoft!

If the company's browser tactics go unpunished, the sky's the limit in other markets. 33



E-business success tips

Analyst Patricia Seybold's book studies the organizations that are making it happen. 85

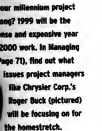


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Year 2000 in 1999

► How's your millennium project coming along? 1999 will be the most intense and expensive year for year 2000 work. In *Managing* (Page 71), find out what issues project managers like Chrysler Corp.'s Roger Buck (pictured) will be focusing on for the homestretch.



Vendors face Y2K spending freeze

By Thomas Hoffman

SOME BUSINESSES plan to approach the final countdown to year 2000 by halting all new systems implementations late next year. The extent to which that will hurt vendors' sales is becoming a hot topic.

Although there's no research that quantifies how widespread a year 2000 systems lockdown will be, *Computerworld* inter-

Some vendors might offset slowdown by selling new functions.

views with nearly two dozen CIOs and Wall Street and market research analysts suggest that even a partial IT spending freeze "is going to be a real negative" for application software providers and systems integrators. That's because corporate customers will be unwilling to enter into long-term projects so close to the millennium rollover, said Edward E. Yarden, chief economist at Deutsche



Reynolds Metals' John Rudin.

Even in 1999, business needs may call for new technology deployments

Bank Securities in New York. Indeed, Wall Street analysts "are questioning whether 1999 is going to be a nuclear winter that devastates the ERP market," said Bruce Richardson, an analyst at AMR Research Inc., an enterprise applications mar-

Vendors, page 95

New fee plans promise flexibility

Value-based idea could cost more

By Craig Strömman

ERP and supply-chain application vendors increasingly are pitching new pricing schemes that base license fees on a buyer's revenue, total employee head count or even the financial return expected from using the software.

But the reaction of software buyers has been decidedly mixed. So-called value-based pricing often requires companies to tack on extra payments if their revenue—or number of employees, in the case of human resources applications—surpasses negotiated levels (see chart, page 104). However, they don't typically get money back if the opposite happens and their business shrinks.

For application vendors, value-based pricing erases the need to keep tabs on whether customers are exceeding the

Licensing models aimed at upgraders

By Jankumar Vijayan

COMPANIES are starting to get more flexible software licensing options as major vendors hammer out new pricing models aimed at answering long-standing concerns about cost, simplicity and portability.

Big-shop software vendors BMC Software Inc. and Candle Corp. are quietly testing new,

long-term software licensing agreements that they claim will make it cheaper for some users to upgrade or change platforms.

The new licensing models are based on users' purchasing points for software packages running on large systems. Unlike many current licenses, the new schemes are supposed to give users the ability to upgrade

Licensing, page 104

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WHERE DID THE WOMEN GO?

IT job stats point to science education bias, glass ceiling. Page 4

IT EVEN TAKES OUT THE GARBAGE

IBM, Sun, Microsoft showcase software for embedded devices. Page 6

HIGH WIRELESS ACT

Microsoft, Qualcomm to link mobile devices, data networks. Page 10

MICROWAVE DIRECTIONS

Start-up to unveil simpler, cheaper microwave MMR technology. Page 14

Web slow to target gift buyers

By Sharon MacIsaac

WITH RETAILERS gearing up for a profitable frenzy of holiday shopping, your favorite Web site must be ready to take in big bucks, too. Right?

Don't count on it. Even though a new study predicts that online revenues will more than double this season compared with last year, many Internet-based stores simply

aren't ready to capitalize on all those eager holiday shoppers.

"You would be surprised how many sites have not bothered to support very basic features that are necessary for gift buying," said Nicole Vanderbilt, an analyst at Jupiter Communications Inc. in New York. In fact, most consumers buy goods for themselves—not gifts—when they're purchasing online, *Web*, page 16

INTERNET COMMERCE

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EXECUTIVE Briefing

News summary for senior managers

Europeans take their privacy seriously, Dan Gillmor writes: U.S. companies that fail to meet tough overseas standards are in for a rude awakening. They take customer service regulations seriously, too. A council of EU ministers has recommended that European consumers be guaranteed the same service on the Web that they're guaranteed in their home countries. Pages 34, 41

After much user prodding, ERP and other vendors are looking at more flexible pricing models based on use, or the value of the software to the customer — not the machines the software runs on. That would let users move R/f3 from a mainframe to Unix without much extra cost, for example. But the price schemes are complex, untried and may lock users into costly and inflexible contracts. Page 1

Online revenues are predicted to double this holiday season, but most shoppers are buying only for themselves online. Web sites now focus on becoming gift providers. Page 1

Users aren't tracking the minutiae of the Microsoft trial, but the sordid details don't shock them. They've always viewed Microsoft as a hard-ball negotiator that never lets a competitor off easy. Page 8

Next year will be intense, as companies struggle with final year 2000 repairs and testing. Users recommend double-checking key systems, testing components and testing component interoperability. Then test partners, contingency plans, desktops and chips. All that testing will be pretty trying, users concede. Page 71

The key to winning at electronic commerce is to focus on

existing customers to make their lives easier using technology. Patricia Seybold recommends. The work of making existing customers happy is more likely to turn new prospects into long-term customers, she writes. Page 85

The number of IT people who have to transfer to keep their job is going up, but most don't know what to expect when they move. Some companies take care of everything; others take care of little more than directions. Techs with hot skills can write their own ticket, however. Page 90

The Labor Department has accused Time Warner of classifying as contractors people who should be listed as staff. Law suits have covered the same territory, but this is the first government action on the issue. IT shops now will need to differentiate casually between contractors — those hired for their skills and tools — and staff workers. Page 37

The Washington Post is one of a growing number of organizations that negotiated special deals with their Web service provider. The provider maintains the hardware on its site, supplies gargantuan bandwidth and promises to keep a gas truck at the curb to fuel generators if the year 2000 bug knocks out the power. Page 43

Getting a handle on app development projects just easier for Nielsen's Leifman Lamb. Software, page 87

Learn when to deploy — and avoid — when your company puts you in for a transfer. IT Careers, page 90

25% of IT managers fret about managing distributed NT data. Servers & PCs, page 63

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YEAR 2000

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Some users halt all systems development to prepare for the millennium. 1

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More opportunity, fewer women in IT

By Barb Cole-Gomolski

OPPORTUNITIES MAY abound in information technology, but the number of women in the field is dwindling.

Compared with 10 years ago, women make up a smaller percentage of computer science graduates, and the percentage of women in IT has shrunk from 35% in the early 1990s to 25% today, according to recent data from the U.S. Department of Labor.

Observers cited several reasons for the shift, though there are no definitive answers. Some cited the long-held belief that girls aren't encouraged at the same rate as boys to pursue science and math in school. To addition, few opportunities for management jobs and the need to juggle job and family cause women to abandon their IT careers, observers said.

"We're losing in a number of places," said Pauline Nist, vice president for product and technology at the Tandem division of Compaq Computer Corp. in Cupertino, Calif. Few women study computer science, and of those who do, many end up leaving the field, she said.

ENROLLMENT DROPPING

According to the U.S. Department of Education, the number of women graduating with bachelor's degrees in computer science has dropped from about 17% in 1984 to 28% in 1995. Some said young women are put off by the stereotype of the computer geek who lacks social skills and is fixated on technical duties.

Denise Gurer, chairwoman of Committee on Women at the Association for Computing Machinery, a New York-based computing professionals' soci-

ety, said women may be turned off to computers at an early age because their first exposure is through male-oriented video games.

Later, as they go through college, women may find that computer labs may have a locker room mentality. "Things like screen savers of scantily clad women are common," said Gurer, who has a doctorate in computer science and works as a researcher at SRI International in Menlo Park, Calif.

During her career, Gurer said she has often felt that she "had to prove herself more" than her male colleagues.

Not so for Nist, who said one of the things she loves about the industry is that "it's much more concerned about your ability than whether you are a man or a woman." The downside is that to get ahead, you have to be willing to make some sacrifices, she said. "Some of

the really great women I've had working for me left to have babies and then reevaluated whether they wanted such demanding careers," she said.

Nist said because of short-

ened product cycles and corporate downsizing, IT departments have become less "family friendly" in the past few years.

For instance, Christine Finlayson left her job as a software

Unlike some women in IT, Pauline Nist of Compaq's Tandem division says the industry is "much more concerned about your ability than whether you are a man or a woman."

engineer at Santa Cruz, Calif.-based The Santa Cruz Operation Inc. after the birth of her second child a few years ago. "I needed something less stressful, and I only wanted to work part time," said Finlayson, who now spends about 40 hours per week managing software beta programs from her home in the Seattle area.

The declining presence of women in IT hasn't gone unnoticed, and some schools are trying to do something about it. For instance, at Carnegie Mellon University in Pittsburgh, the percentage of women in the computer science program has jumped from 8% to 20% during the past three years, said Allan Fisher, associate dean at the university's School of Computer Science.

The increase is partly because the school has become more flexible about the progression of courses students have to take. "It makes it easier for male and female students who may not have that much prior experience with computers to enter the curriculum," Fisher said. □

ENTERPRISE NETWORKING

Convergence isn't cheap or easy

By Bob Wallace

CISCO SYSTEMS INC. last week sought to advance the case for complete data, voice and video convergence with an array of offerings it says will help users reduce the total cost of network ownership.

Cisco's enhancements and new products come at a time when it and its rival, 3Com Corp., Nortel Networks and Ciena Systems Inc. have been preaching the benefits of convergence. Users still cool to the idea cite cost, along with technical challenges and other man-

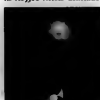
agement issues, as obstacles.

"Convergence is a good idea, but the technology is still new and very expensive," said Dean Qualls, network operations manager at J. C. Bradford & Co., a regional investment bank in Nashville.

Qualls, who is skeptical that phone users will be satisfied with voice over Internet Protocol connections, for example, said he couldn't speculate as to when his company, which has 52 branch offices and five main sites in the Nashville area, would have a single network for voice, data and video. Some of them are starting with branch offices on the road to convergence, said John Morency, a vice president at Newton, Mass., consulting and research firm Renaissance Worldwide Inc.

A company with 100 branch offices can expect to pay roughly \$1.5 million for the capital equipment needed to support voice over frame relay alone, Morency estimated. At the central site, a company with 500 to 1,000 employees can expect to spend \$500,000 to \$300,000 for the "network"-based phone branch exchanges (PBX) and gateways needed to support voice over the LAN.

Cisco announced add-ons to its 4000 high-end routers and its AS5300 Access Concentra-



Virgil Palmer of Air Products & Chemicals: "We're not about to throw out our telephone equipment"

tor, and enhancements to its Catalyst 5540 and Lightstream 10 to LAN switches that will enable them to support converged traffic. The vendor also plans to offer network-PBXs once its acquisition of Cetus Systems Inc. is approved. Cisco recommends that users with heavily used Ethernet move to switched Ethernet to get top voice quality from network-based PBXs. But branches with lightly used LANs can often get by without an upgrade.

Despite the evolution of network-based phone systems,

Frank Solitis isn't ready to pen an obituary for PBXs. Solitis, senior vice president of operations at Lake City Bank in Warsaw, Ind., is running voice over the company's massive, T1 frame network, a project that emphasized the need for teamwork. "You have to sit down and spend time planning with the networking and telecommunications people and telephone company people to make sure it's a cooperative effort," he said.

Although he benefits from running a converged wide-area network, Todd Dion, vice president of technology at TutorTime Learning Systems Inc. in Boca Raton, Fla., came upon a "gotcha" that's keeping him from extending video to LANs. Dion found that he can't send video traffic through his firewall because the device doesn't support the H.323 protocol for videoconferencing.

Convergence isn't a good idea if it means swapping out equipment that's still being paid for, said Virgil Palmer, networks director at Air Products and Chemicals Corp. in Allentown, Pa. "We're not about to throw out our telephone equipment just to jump on something new. We need systems that will let us maximize the value of our original investments."

The bottom line: "We'll wait for someone else to take the first step," Palmer said. □

CONTINUING

A Nov. 2 Servers & PCs section story ("Publishing: Mac Nation,") misidentified Ed Meade's company affiliation. He works at Doubleday Direct Inc.

An Oct. 19 In Depth story ("Press 'enter' to 'enter'") misidentified the length of time a judge has prohibited computer classes. Christopher Lamprecht, from suing

the internet or holding a job that requires him to use a computer. The prohibitions are for three years after Lamprecht's release from prison.

An accompanying article with this story, "Connections, crime pays," misidentified a photo subject. He is Robert Meade.

An Oct. 26 In Depth story ("Extra-national intrigue") misprinted the name of one week-end participant. He is Robert Hines.

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NT to enter embedded arena

► To offer static devices connection to a network

By Sharon Gaudin

COAPARTS USES and industry watchers say Microsoft Corp.'s Windows NT operating system — not exactly known for being lightweight — may have been trimmed down enough to compete in the embedded arena.

Microsoft announced Windows NT Embedded 4.0 at the Embedded Systems West Conference in San Jose, Calif., last week. The new operating system — weighing in at 12M bytes of ROM compared with Windows NT 4.0, which totals about 125M bytes — is based on Windows NT 4.0 technology instead of the upcoming Windows 2000. The embedded operating system is slated for beta-testing early next year and shipment in the first quarter.

Embedded NT was designed to be used in routing switches, high-end copiers, manufacturing machines and point-of-sale terminals. The operating system gives one-time machines the intelligence to connect with a network for receiving and sending information.

Windows 2000 was designed for backward-compatibility with NT 4.0. Microsoft spokesmen said. That means companies that use NT 4.0 for embedded devices should have no trouble using them with Windows 2000 servers and workstations.

"This is definitely going to work for us," said Donald Byrne, senior director of product marketing at Pittsburgh-based Fore Systems Inc., a networking company. "We're using NT to make our switches application-

aware. It will enable our switches to prioritize traffic based on the importance of the user or the application. NT will integrate the switch, with the network and the applications running across it."

A SURE THING?

Byrne said he's confident that NT can be trimmed down enough to run on small systems such as switches because he's already made it happen.

"We basically took Windows NT 4.0 and started disabling services and getting it into a format that is very close to what Microsoft has announced. We embedded it in our switches, and it's working very, very well," he said.

John Frederiksen, Microsoft's group product manager for Windows NT, said Embedded NT also was designed to enable

Features of Microsoft's Embedded NT

- Beta software due early next year
- Shipment expected in Q1 1999
- Based on Windows NT 4.0 technology
- Takes advantage of NT 4.0 Service Pack 4.0 updates and additions
- Geared toward five areas: retail point-of-sale terminals, medical devices, industrial automation, office automation and telecommunications

a printer, for example, to keep track of which employees send jobs to the printer, so the appropriate departments can be billed for the work. And it should enable a machine that builds widgets to keep track of the parts being used and automatically put in an order request when inventory hits a certain point.

GOOD CITIZENS

"There's a huge opportunity for products and devices to become part of the networked community," said Greg Blatnik, vice president at Zona Research Inc. in Redwood City, Calif. "Realistically, we'll probably see

products emerge around the middle of next year."

Both Blatnik and Dwight Davis, a Microsoft analyst at Summit Strategies Inc. in Kirkland, Wash., said Microsoft is entering a market in which Sun Microsystems Inc. has had a head start with its platform-independent Embedded Java. Hewlett-Packard Co. has long been a major player in the embedded market, especially because its printers account for a major chunk of its revenue.

"Both Embedded NT and Embedded Java are pretty new out of the gate," Davis said. "There's a huge embedded market out there. I see both grabbing their own share of the market."

But Howard Green, marketing manager at San Jose, Calif.-based Cell Computing Inc., a company that builds small motherboards, said NT has one strong advantage over Java — NT applications.

"There's a lot of software on the market for NT," he said. "If you can have all your devices on your network on one user interface and on one operating system with all the same operating system internals, you've got it going on." □

Users worry about NT
Microsoft's new tests are meant to help. Page 63.

Monitoring extends beyond meters

By Matt Hamblen

UTILITIES STARTED MONITORING electricity meters via wireless networks and the Web two years ago. But technology trials announced last week by IBM will allow companies to actually watch vending machines, copiers and even trash receptacles around the globe.

By reducing the need for routine checks on all types of equipment, corporations could save 30% or more per year on such costs, analysts said.

Data gathered by a processor on a trash compactor, for example, would save a truck driver from making regular checks. Instead, the driver would be dispatched when the compactor needed to be emptied.

BIG SUPPORTER

IBM is lending its name to the effort to monitor embedded systems in all types of mundane devices, announcing that it will use its global network to connect to software from EmWare Inc. within eight- and 16-bit microcontrollers being added to the latest machines.

Several small companies manufacture devices to allow network monitoring, but IBM is the first to give an existing network such remote capabilities. Other major data carriers are expected to follow suit, analysts said. It's also significant that

EmWare's software lets the devices be accessed by any type of network, they added.

Officials at the two companies said trials will begin this week with a large elevator company and an international vending machine company.

FEWER TRIPS

CellNet Data Systems' technology for wireless remote reading of electric meters has made a big difference at St. Louis Utility AmerenUE.

1994

Field workers made 2,500 trips per year to read meters and talk to customers about bill complaints

1998

With the technology, workers make about 700 trips per year

CellNet Data Systems Inc. in San Carlos, Calif., has begun work with Xerus Corp. in Rochester, N.Y., to monitor copiers over a cellular network and track when they need toner, paper or maintenance. "IBM's announcement, with its huge network, brings this technology more into the mainstream," said Ellen Carney, an analyst at Datquest in Lowell, Mass. But companies are unlikely to

embrace it for three to five years, she added. "Even IT managers look at you like you have two heads when you talk about this," she said.

CellNet officials have begun to market their services beyond connecting electricity meters to utility central offices, the company said. CellNet already has 1.5 million meters online and has contracts to add another 4 million meters with at least seven utilities, the officials said.

One of the utilities, AmerenUE in St. Louis, has nearly 800,000 electricity and some natural gas meters in homes and businesses being monitored daily using CellNet technology. Every 24 hours, a meter is read remotely although CellNet has the ability to read a meter every 2.5 minutes.

"It allows us a faster response to disruptions and eliminates the manual reading of meters," said Susan Gallagher, a spokeswoman for AmerenUE.

In July, AmerenUE installed CellNet technology at Ford Motor Co.'s Ford Explorer assembly plant in St. Louis to monitor and report on energy consumption at 50 points in the plant.

The energy consumption data is used by Ford executives in Detroit to analyze whether work processes or production machines need to be changed to cut energy costs, spokesmen said. □

Sun targets browsers again

By Carol Shive

SUN MICROSYSTEMS INC. last week jumped back into the Web browser market with an offering aimed at network computers, kiosks and other non-PC devices.

Sun is pitching its new browser due next year, as an alternative for companies that may be worried that Microsoft Corp.'s expanding interests in real estate, auto retail and travel will encroach on their own business interests, said Jonathan Schwartz, director of Sun's Java enterprise products group.

Written in Java, one of the potential advantages of Sun's new browser is its ability to run on myriad embedded devices — from ads machines to gas pumps — that have widely varying operating systems.

Having a Web browser at the gas pump could, for instance, let a customer withdraw money from a bank account. "You could consolidate all of your life service interactions in one place," Schwartz said.

"The designer of the embedded hardware could pick any processor chip they would want, and then once you have a [Java] virtual machine for it, the rest of your software would run," said David Folger, an analyst at in Stamford, Conn.-based Netscape Group Inc.

Although device makers may benefit, Folger foresees few end-user companies finding a direct need for a Java browser.

Sun's existing HotJava browser has been hampered by its limited feature set. The new one will add support for Hypertext Markup Language (HTML) 3.2, JavaScript and plug-ins, Sun said.

The new browser won't immediately feature cutting-edge support for standards — such as HTML 4.0, dynamic HTML and Extensible Markup Language — that Netscape and Microsoft are expected to deliver next year. □

A review of Netscape Communicator 4.5
Page 43.

Oracle Express analyzes 50 times

more
data than Hyperion Essbase.

	<i>Data Density</i>	<i>Query Execution Time</i>
Oracle Express 6.1	5.0	0:34:02
Hyperion Essbase 5	0.1	0:36:30

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COUNCIL CERTIFIED

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Apple claims bullying by Microsoft

► Gates evasive when shown E-mail evidence

By Kim S. Nash
and Patrick Thibodeau
WASHINGTON

THE GOVERNMENT continued to press against Microsoft Corp.'s business methods in court here last week, as an Apple Computer Inc. executive testified that Microsoft strong-armed Apple into making software deals it wouldn't have made otherwise.

Yet as the trial starts its fourth week, several information technology managers said it hasn't changed their views of Microsoft much. Daily court-

room events are too frustrating to track closely because it's hard to tell who's true and what isn't, they said.

"I haven't seen anything that I didn't know or suspect or believe in the first place," said Don Stroud, director of MIS at the Plain Dealer Publishing Co. in Cleveland. "One would have to be naive to believe that all these people are angels," he said of executives at Microsoft and its industry rivals.

TOUGH SELL

But Chris Horrocks, CIO at Commercial Financial Services Inc. in Tulsa, Okla., said he was surprised by the lengths to which Microsoft apparently has gone to compete in the Internet software market.

"The evidence is demonstrating that they have been tougher than I thought," Horrocks said, citing Microsoft's alleged bullying of Apple as an example.

Avie Tevanian, senior vice president of software engineering at Apple, testified that his company was forced last year to make Microsoft's Internet Explorer its default Web browser or risk losing Microsoft's support for its Office for Macintosh application suite.

"It was a matter of [Microsoft] using extreme power in the market to try to affect the terms of another business deal," Tevanian said. "That seemed inappropriate."

Microsoft countered in court that it was simply trying to find off the possibility of Apple filing a \$1.4 billion patent infringement suit against it.

Without saying outright that Microsoft had threatened to kill Mac Office, Microsoft lawyer Theodore Edelman sought to put negotiations about the future of the suite within the framework of the patent issue.

In August 1997, the companies agreed on a deal that made Internet Explorer Apple's default browser and guaranteed continued development of Mac Office for five years.

Microsoft bought \$150 million of Apple stock and agreed not to sell it for a period of three years.

The two companies also settled the ongoing patent dispute, with Microsoft paying Apple an undisclosed sum.

Tevanian also charged that Microsoft tried to coax Apple into dividing the multimedia market by asking Apple not to make its QuickTime audio and video software available on Microsoft's Windows platform. Apple rejected that idea, he said. Microsoft has denied making the proposal.

Also last week, U.S. Department of Justice lawyer David Boies played about two of 20 hours of videotaped testimony from Microsoft Chairman and CEO Bill Gates in which Gates was confronted with a series of seemingly damaging internal E-mail messages.

Gates often was evasive, claiming that he didn't know what was being discussed in the E-mail.

That tack isn't unusual — especially in antitrust trials — according to George Cunningham, a lawyer at Strobeck, Phleger &

Harrison LLP in New York.

"When a company is confronted with harmful internal documents, it may adopt a 'crazy middle-management defense,' in which underlings are said to do and say things that more responsible top executives would not."

"The idea is to have the person at the top with 'Godfather'-like deniability," said Cunningham, a former special trials lawyer at the Justice Department. □

Let's go to the videotape

Government lawyers made much of the disparity between Bill Gates' internal E-mail and his August deposition, under questioning by lead U.S. lawyer David Boies.

1. E-MAIL
"Do we have a clear plan on what we want Apple to do to undermine Sun?"
— Gates, in Aug. 4, 1997, E-mail to Senior Vice President Paul Maritz and other Microsoft executives

2. VIDEO DEPOSITION
Q: What did you mean when you asked Mr. Maritz whether or not "we have a clear plan on what we want Apple to do to undermine Sun?"
A: I don't remember.

3. E-MAIL
"Telling Apple to do anything that significantly/seriously disadvantage us Netscape will be tough. Do you agree that Apple should be meeting the spirit of our cross license agreement and that MacOffice is the perfect club to use on them?"
— A Feb. 12, 1998, E-mail from Ben Shih, a senior Microsoft executive, to Gates

4. VIDEO DEPOSITION
Q: Do you have an understanding of what Mr. Bradford means when he refers to MacOffice as "the perfect club to use on Apple?"
A: No.

5. E-MAIL
"When I met with you last, you had a lot of pretty pointed questions about Java, so I want to make sure I understand your issues/concerns. Here's a start, can you please add any that I'm missing."
1. What is our business model for Java?
2. How do we exert control of Java away from Sun?
3. How do we turn Java into just line talent, best way to write Windows applications?"
— April 14, 1998, E-mail from Ben Shih, a senior Microsoft program manager, to Gates

6. VIDEO DEPOSITION
Q: Do you have any reason to believe that [Shih] would have misstated what you told him when you met with him last before April 14, 1997?
A: In no way does this purport to be a restatement of things I said to Ben Shih.

Notes on Netscape

An expected, Microsoft's last week appeared a Boston judge's ruling having it from getting at taped interviews and written notes gathered by two local professors who wrote a book about Netscape's business ups and downs.

Microsoft wants to use the material in its government lawsuit trial, to show that it was mistaken by Netscape's own executives — not any illegal designs by Microsoft — that account for Netscape losing ground to Microsoft in the browser war.

A decision isn't expected for several weeks.

Leaked memo praised open source

► Microsoft identifies Linux as potential threat

By David Owenstein

THE COMPETITION between Microsoft Corp. and open source code came long before a pair of leaked Microsoft memos described such code as a threat.

That was the word from prominent open-source and free software advocates, who used the posting of two Microsoft memos on the Web last week to call for Microsoft to join them rather than fight.

The memos, dubbed Halloween I and Halloween II, were published by open source advocate Eric Raymond. They first appeared Oct. 31 at www.opensource.org. The memos were

confirmed as genuine internal reports by Microsoft, whose response is at www.microsoft.com/microsoft/highlights/edletter.htm.

Halloween II, on which Microsoft hadn't commented at press time, zeroes in on the free and open Linux operating system.

The memos praise open-source development, in which the source code for software is freely distributed, for encouraging large numbers of developers to solve problems and make improvements.

The process has helped products such as Linux and the Apache Web server become

credible, high-performance competitors to Windows NT, the memos said.

"Due to its Unix heritage, Linux represents a lower switching cost for some organizations than NT," Halloween I said. To Microsoft, the Halloween I memo "is a snapshot in time — one person's view," said Colleen Beauregard, a Microsoft spokeswoman. "It is not Microsoft's official response to Linux."

Bob Young, president of Linux vendor Red Hat Software Inc. in Research Triangle Park, N.C., said the memo added little new information to the competition story.

Red Hat and Microsoft have been competing for sales to Internet service providers for

more than two years, he said.

Linux has risen in a climate of Microsoft strength and does not depend on Microsoft's failure for its own success, Young said.

Michael Gould, an analyst at Patricia Seybold Group in Boston, said Microsoft's best defense against open or free software is obvious: Produce good products with better support than free software's scant support and charge a reasonable price for the added value.

Tim O'Reilly of O'Reilly & Associates Inc., a major backer of the popular and free Perl scripting language, urged Mi-

crosoft to embrace the opportunities created by open source platforms rather than viewing open source as a threat.

Richard Stallman, founder of the Free Software Foundation in Boston, said Microsoft's strategy alone makes little difference in the debate between advocates of free software and proprietary software.

Stallman said software firms, including Microsoft, can stifle free software development with restrictive licenses and patents. But Microsoft's individual strategy is a relatively insignificant part of the greater debate. □

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Wireless 'service bureau' to link mobile users

► *Microsoft-Qualcomm device melds pager, phone, handheld*

By Matt Hamblen

QUALCOMM INC. and Microsoft Corp. tomorrow will announce a new wireless communications service to help mobile

workers connect to corporate databases, Microsoft officials said.

The companies are expected to demonstrate software that wireless carriers would use in rolling out networks to

corporate customers, according to five industry analysts familiar with the announcement. The joint venture would act as a service bureau, routing a wireless message to a corporate network over a wireless network operated by AT&T Wireless, which is a division of AT&T

Corp., and other carriers, analysts said. The venture would enable a single device to act as pager, cell phone and handheld computer using the Windows CE platform, said analyst Dan Briere at TeleChoice Inc. in Stafford Springs, Conn.

Microsoft also is developing a "micro-browser" for enabling smart cellular phones to access E-mail and the Web, analysts said.

Wireless wide-area networks are an immature technology but sought after by corporations that want to connect sales forces and even remote offices to enterprise resource planning data and more if it can be done efficiently and securely, analysts said.

"Today, you can't take raw data and send it efficiently over a wireless network since it can cost 30 cents a minute," compared with 5 cents a minute for some landline long-distance connections, said Alan Reiter, an analyst at Wireless Internet & Mobile Computing in Chevy Chase, Md.

The Qualcomm-Microsoft venture will compete against the Symbian joint venture announced in June by Motorola Inc., Nokia AB in Finland, Ericsson AB in Sweden and Psion PLC in the U.K. □

Why VERITAS NetBackup?

Y2K!

Microsoft snags Web ad company

By Kim S. Nash

MICROSOFT CORP.'s acquisition last week of LinkExchange Inc., a Web advertising company, will help keep the www.msn.com portal competitive with rivals such as Yahoo Inc., analysts said.

The deal could also help msn.com make money — something Microsoft officials have acknowledged hasn't yet happened. For example, Microsoft could start charging LinkExchange customers who want to advertise on Microsoft's msn.com portal sites, such as CarPoint and HomeAdvisor.

But more likely, analysts said, is that Microsoft will benefit from the increased traffic to msn.com and its sites from visitors who see a CarPoint ad on a LinkExchange customer's site and then buy a car there. Through LinkExchange's Banner Network program, more than 400,000 Web sites trade and sell advertising space at one another's sites.

Microsoft has already sold some advertising banners at its msn.com Web sites, but with the addition of LinkExchange-generated traffic, Microsoft will get more visitors to its sites, said Vernon Korman, an analyst at Keenan Vision Inc. in San Francisco.

Neither party would disclose how much Microsoft paid for San Francisco-based LinkExchange, which was founded in March 1996 and is one of the oldest online advertising companies. But press reports last week pegged the deal at being worth \$450 million in Microsoft stock. □

Trick OR Treat

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FRANKLY SPEAKING

Nightmare on the Net

FRANK HAYES

Last Monday, ABC News got hit by every Web site's nightmare. Something that wasn't supposed to appear — Tuesday's election results — went live on ABCNews.com the day before the polls opened. Complete results of Senate and governor races were available for hours to anyone hitting the site before the network spotted the glitch and pulled the plug.

The results weren't real, of course. For example, ABC had New York Sen. Al D'Amato trouncing Charles Schumer, who later turned in a 54% to 45% victory, and put actual winner Jesse Ventura trailing in third place in the Minnesota governor's race.

The "early results" were part of a test, using dummy numbers apparently based on recent polls. ABC won't confirm the source of the phony results, except to say they "do not reflect the

reporting or news judgment of ABC News."

Well, of course they don't. They reflect an embarrassing screwup in which information that was supposed to stay under wraps became very, very public.

Who's at fault? ABC officially blames "human error." That's diplomatic, but let's cut to the chase: If the IT people responsible for the



IT people know the rules — and should have enforced them at ABC.

site had done their jobs right, that screwup never would have happened.

Hey, that may not be kind or reasonable or even fair — but it's true. Maybe the test could have been kept away from the live systems entirely. Or it could

have used what was more obviously test data or dummy names. Certainly it should have been monitored continuously. IT people know those rules — and should have enforced them.

We've got decades of experience making sure data doesn't fall into the wrong hands. We've always built staging areas and safeguards of every kind to make sure tests can't spill over into production systems. If we aren't the ones responsible for blocking this kind of information leak, who is?

Never occur to top brass that mixing Web site tests with live systems puts the business at risk.

Users? Get real. They want their new Web site features to happen right now, and they'll keep pushing the limits and cutting corners and bending rules as long as they can get away with it.

That leaves to IT the nightmare task of protecting clueless executives and reckless users from themselves.

Funny thing is, we've been doing this for decades, since the days when our main job was guarding and dispersing data. Back then, IT was buried deep in the organization, far from the front lines of business. That was before

companies got turned inside out by the Internet.

Now we are the front lines of business. And whether they like it or not, when it comes to the Web and electronic commerce, business users and managers don't just need our wires and servers and software. They also need our expertise at keeping them from shooting themselves in the foot — or the head — when it comes to how those systems are used.

They may not like what we'll do. Master of fact, they'll probably hate it — even more than when IT took control of PCs and LANs away from users. They'll resent the restrictions and chafe against the controls. They'll accuse us of being power-hungry control freaks — and it's up to us to make sure that's not true.

But unless we take a firmer hand, and lend users a hand in understanding how to develop and use their Internet-based information systems — that's what they're doing, after all, developing systems to distribute information — we'll be condemning them to relearn, by painful experience, the past half-century of IT practice.

That would be a real nightmare. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

SHORTS

Digicash files Chapter 11

Micropayment vendor Digicash Inc. has filed for Chapter 11 bankruptcy protection, the company confirmed last week after closing its offices in Amsterdam and laying off all but six people at its Palo Alto, Calif., headquarters. The company's E-Cash software lets Internet shoppers conduct small transactions over the Web without using their credit cards for such ones. But so far, market acceptance of such offerings has been limited.

Stanford systems hacked

Hackers penetrated systems at Stanford University last month during a 15-day period and modified some system binaries and log files but didn't damage user data or files. The university said it believes the hackers entered its systems from Sweden and Canada via the Internet and installed a mirror program that steals data. The security breach started Oct. 11 and was discovered Oct. 26. The systems became vulnerable when security patches for two workstations used for coursework and non-sponsored research were improperly installed, according to the university.

NT data hard to recover

Windows NT servers are more susceptible to data loss than those using other operating systems, according to a report by Broadcasters Network International Inc., a Glendale, Calif., consultancy. Because NT doesn't track deletions, it's harder for systems managers to recover users' misdeleted file deletions. The report cites two surveys of about 500 systems administrators and one of 231 administrators. A spokesman said recovering 100MB bytes of data can cost as much as \$100,000.

FBI investigates Web hack

The Federal Bureau of Investigation is investigating an Oct. 17 attack on The Boston Globe Web site (www.boston.com) and its possible connection to similar incidents at a handful of news companies. An E-mail message — with pornographic references in the text of the memo and www.boston.com in the "from" line — was sent to thousands of Internet users. A Globe spokesman said the E-mail addresses were generated randomly and many didn't exist, so the E-mail was bounced back to the Globe's mail servers.



Customer: Consolidated Freightways Corp., Menlo Park, Calif.
Prime contractor: IBM Global Services
Terms: \$150 million, five years

Highlights: Except for new system development, contract covers just about everything, including recruiting, management of staff turnover, all desktop computing services, help desk support, data center operations and voice and data networks. The prime motivator was staying ahead of competitors, CIO Man Saikkonen said.

Data mining for insurers

IBM has introduced a data mining system aimed at the insurance industry. Winterthur Swiss Insurance Group in Switzerland plans to use the system, part of the DecisionEdge family, to determine which companies are the most likely candidates for other insurance offerings. Pricing will start at \$1 million. DecisionEdge systems for the telecommunications and utility industries were introduced last year. IBM plans a version of the system for retail banking in the next 30 days.

Optical fiber patent sought

Start-up Silblond Inc. in San Diego demonstrated last week that it could transmit data at 99% bit/sec. over a single wavelength using a single optical fiber 100m long, using a process called Reflective Synchronization Communications. Analysts said other fiber-optic vendors are testing similar bandwidth capacity, but only with multiple waves traveling together over a single fiber. Silblond applied for patents on the process last month and announced its first trial customer will be San Diego State University.

Lycos dogged by ad suit

Labrador Software Inc. filed suit against Lycos Inc. for allegedly violating its trademark in Lycos ads featuring a black Labrador retriever. Danvers, Mass.-based Labrador plans to unveil its E-Retriever Internet search software Nov. 15. Lycos called the suit frivolous. "The two dogs don't look anything alike, and we never call it a Labrador, we call it a retriever," said Lycos spokeswoman Michele Perry.

SHORT TAKES The Bureau of Labor Statistics released part of an employment report on the Internet a day before it was due to go public because of human error. ... Microsoft Corp. last week released the first public beta of Version 5.0 of Outlook Express for consumers ... along with a beta version of Internet Explorer 5.0 that can be downloaded at www.microsoft.com/ieintro/ie5... ... San Microsystems Inc. last week announced its intention to port the Java Development Kit to Linux. ... Gateway in Saint Louis City, S.D., last week announced a 350-MHz sub-\$2,000 workstation, dubbed the E5000, for users of applications such as computer-aided design and software development.

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Sybase CEO leaves for top job at NCI

Sybase Inc.'s chairman and former CEO Mitchell Kertzman tendered his resignation last week to become president and CEO at Network Computer Inc. (NCI), a Redwood Shores, Calif.-based maker of information appliance software launched in 1996 by rival Oracle Corp. In an interview with senior writer Stewart Dock, Kertzman spoke about his move and his plans for the future.

On how NCI caught his attention

My wife says the three things I like to do best are watch television, surf the Web and play with gadgets. And she said, "This job, they pay you to do that!" This company has real products, real technology, real customers and real revenues, so I saw it as a great opportunity.

On NCI's challenges in the coming year:

We have to deliver products on time and do a better job of explaining who we are and what

we do. The whole area of information appliances isn't very well understood. The general public thinks of it as a toaster with an RJ-11 [telephone jack] on the back—so we need to help better define it.

On NCI's Independence from Oracle:

NCI is still majority-owned by Oracle, but that state has been declining and will continue to decline as we bring in additional investment. [Other investors include Netscape Communications Corp., Sony Corp., Sega Enterprises Ltd. and Nintendo Co.]

The goal is to have an independent public company. I've seen very few traces of Oracle; there is no management-level integration with Oracle, and only two of the directors, [Chairman] David Rouse and [Oracle CEO] Larry Ellison, are from



Oracle. Hiring me is an affirmation of NCI's independence.

On leaving Sybase:

Obviously, I wish the financial results were better. I have the traditional view that most people coming into a turnaround situation have. I wish I had been more aggressive when I took over. But I think I helped stabilize the company in a difficult market condition, and I'm optimistic about Sybase going forward.

My leaving here has been long-planned. We've been on a succession path with John Chen since I brought him in [from Siemens-Nixdorf Inc. in July 1997]. I'm happy, John's happy and the board is happy. □

Microwave systems deliver big bandwidth

By Bob Wallace

USERS LOOKING to extend the reach of their Fast Ethernet campus networks without expensive local carrier services or construction can turn to 100M bit/sec. microwave systems from start-up WinNet MCS Inc.

Where too many users are forced to funnel traffic from high-speed campus networks onto low-speed and costly local carrier pipes, the Sunnyvale, Calif. vendor's systems, due out next week, will let users maintain high speeds to sites up to six miles away.

"This is an ideal way to extend a 100M-bit campus backbone network because of its simplicity," said Sam Alami, president of Sterling Research in Sterling, Mass.

Most users aren't interested in digging and burying cable between buildings, he added. "Getting up on the roof and installing a microwave system is much more compelling," Alami said.

Price is also a factor. The Win-100 packages, with one starting at \$60,000, plug in directly to switches and routers. The vendor claims 94M bit/sec throughput on the connection.

By comparison, users can

expect to pay a local carrier \$5,000 per month for a 45M bit/sec. line, which means that the Win-100 pays for itself in a year while providing more than twice the bandwidth, Alami said. Carriers don't offer Fast Ethernet services.

GOOD PRICE

One user thinks \$60,000 for 100M bit/sec. of bandwidth is more than reasonable. "We have two locations we could use more bandwidth between, and 100M bits would satisfy them for quite a while," said Mike

Felerski, systems network manager for Butler County, Ohio.

"The [WinNet pricing isn't] bad for that kind of bandwidth. [The Win-100] is a reasonable alternative to laying fiber between locations."

But microwave isn't for everyone. For starters, systems require a clear line of sight between rooftop antennae.

And bad weather, such as rain, can temporarily hurt performance. And many microwave packages, including the Win-100s, require users to get radio frequency licenses from the Federal Communications Commission, which can take weeks or months. □

Boole users gird for BMC price hikes

► Help with product integration strategies might placate users

By Cynthia Bourneville

THIS DETAILS WERE sketchy, but that didn't worry customers much last week when BMC Software Inc. announced plans to acquire San Jose, Calif.-based networking veteran Boole & Babbage Inc.

Users told Computerworld they were happy with the deal despite the lack of information about BMC's plans, because the alliance could help them manage a broad range of applications from a central location.

Yet the merger could have customers paying more for products: BMC officials said they have a reputation for being a high-mile vendor rather than a low-priced one.

Some users weren't sure how they would respond to possible price hikes.

"Boole has been more flexible than BMC in terms of price and conditions," said Larry Dystyne, assistant vice president at Insurance Services Office Inc. in Pearl River, N.Y. Yet he added

A list of BMC's most significant acquisitions

Date	Company	Price
November 1998	Boole & Babbage Inc.	\$900M
March 1998	BGS Systems Inc.	\$285M
May 1997	Data Tools Inc.	\$69M
January 1994	Patrol Software	\$36M

that BMC has made dramatic technological improvements over the years, which in some cases might make up for higher prices.

MORE MONEY? MORE VALUE Meanwhile, other Boole customers, such as Andie Shih, manager of automation and process engineering at Ontario Hydro in Toronto, are willing to consider higher prices if BMC offers incentives.

"Now that they are married, it is their obligation to help me converge to their future direction," Shih said. "I would expect that they would give me a trade-in value for that."

Command/Post is the core product behind Boole's end-to-end management offerings. It lets users view an entire net-

work infrastructure from one console. Combined with BMC's Patrol tools, which monitor applications and databases, it will help customers automate the process of correlating information from those sources back to Command/Post to determine where problems might lie.

However, some Boole and BMC products don't integrate. Bert Geely, a technical leader at New York State Electric & Gas in Ithaca, uses automation tools from Boole and recovery tools from BMC.

He said he wants to tie those tools together on the company's IBM OS/390 platform and hopes the merger will strengthen that integration.

Integration occurs when Patrol agents feed information to Command/Post. □

Card makes old PCs new again

By April Jacobs

EVERGREEN TECHNOLOGIES INC. plans to release a PCI-card-based product that will let PC users upgrade their desktop PCs to Intel Corp.'s latest Celeron processor mode.

The Corvallis, Ore., company will make the upgrade cards available midmonth with a starting price of about \$350. In addition to offering 333- and 400-MHz versions of the Celeron, Evergreen will offer the K6-2 processor from Sunnyvale, Calif.-based Advanced Micro Devices Inc.

Initial benchmarks provided by Evergreen indicate that an upgraded PC will have about 95% of the performance of a new, similarly configured PC.

If that holds in real-world use, the PCI-based upgrade will deliver more speed than most upgrades provide. Company officials said the upgrade achieves

that speed by being coupled with a 100-MHz bus on the PCI card, rather than using the 66-MHz bus on older PCs. However, the card must still communicate with the rest of the system through the PCI bus at its 33-MHz speed. That communication could slow down overall performance, although Evergreen officials said they have figured out how to avoid that.

Using the PCI slot is a new approach to upgrades. Most upgrades today require replacing the existing processor or replacing the motherboard and often replacing Windows drivers, which "is a very expensive proposition," according to Kevin Knox, an analyst at Gartner Group Inc. in Stamford, Conn.

The card could be a worthwhile investment for some companies if it proves easy to install and actually lives up to the performance gains that users expect, he said. □



"If they can put a man on
the moon, why can't they solve
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Web slow to target

CONTINUED FROM PAGE 1

cording to Jupiter's latest research.

A majority (59%) of 2,100 Web shoppers surveyed said gift buying accounts for less than 10% of their overall Internet purchases, in part because Internet-based stores haven't effectively gone after the market, the market research firm concluded.

The good news for Web retailers lies in the potential to convert those "self-buyers" into gift buyers, Vanderbilt added.

Despite the relative scarcity of gift buying online to date, Jupiter predicts that online holiday shopping will more than double this year compared with last year, to \$4.1 billion. Others are even more optimistic, with the electronic-commerce trade association Shop.org predicting that revenues will triple, based on a survey of about 100 online retailers.

"We are expecting Christmas to be really large this year —

double to triple," said Steve Hamlin, vice president and general manager at IQVC, the Internet arm of the TV shopping channel QVC Inc. in West Chester, Pa. He was speaking at last month's Shop.org conference in New York. Online auctioneer Onsale Inc. in Menlo Park, Calif., also expects its November and December sales to double or triple.

Although the electronic-commerce elite such as Amazon.com Inc. and Garden Escape Inc. boast features such as gift registries, online gift certificates and gift wrapping, many other shopping sites don't. Gift registries are particularly useful in helping Web retailers develop more revenues from existing customers, Vanderbilt said.

Experts said sites can still add features such as gift registries, where users can post items they want. Clinique.com last year launched a service offering to



E-mail users' prospective "Santas" with gift suggestions.

Few sites offer the options that some mail-order catalogs do, such as allowing an impulse buyer to purchase an item in early November but schedule shipment in mid-December. That's mainly because of the complexity of systems integra-

tion that such service entails. Many Internet stores have experienced only one or two holiday shopping seasons and are loath to jump into such projects. They are more concerned about issues such as handling high-volume transactions and keeping up crucial links.

"It's too complex from an operations standpoint," said Phil Polshook, vice president of marketing at EToys Inc. in Santa Monica, Calif. Instead, EToys is working on setting up a second cluster of servers on the East Coast to boost performance for shoppers there and to provide redundancy. The toy retailer is also adding a backup system in case the direct link to its credit-card authorization goes down, as it has occasionally done.

BAD THINGS

"If it goes down two hours on Dec. 12, we're really screwed," Polshook noted. EToys, which was still new during last year's holidays shopping period, could see a twentyfold increase in sales, Polshook said.

EMarketer, a consulting firm in New York, recently predicted that this year's overall consumer online retail sales will hit \$4.5 billion. However, that's a tiny percentage of annual overall retail sales — Wal-Mart Stores Inc. last week said it alone posted \$12.4 billion in sales for just the five weeks ended Oct. 2.

A National Retail Federation survey conducted with Deloitte & Touche in New York, estimated that the average Internet holiday shopper will spend \$420, or 27% of his total gift budget, online. About 30% of all Internet users are expected to buy holiday gifts on the Web, the survey said. □

Fears mount on splintering of Java platform

By Carol Shoon

ENOUGH FRANKS of a fractured Java community resurfaced last week, as Hewlett-Packard Co. and more than a dozen other vendors announced plans to work on their own real-time extensions to the Java platform.

The next day, Sun Microsystems Inc., creator and steward of the programming language, also detailed plans to work on a real-time Java specification through its controversial evolving process [CW, Oct. 19].

Some companies unhappy over Sun's level of control have chosen to go with the HP-led group. Others said they'll stick with Sun, and some said they plan to support both groups to meet their customers' needs.

REALLY CRITICAL

That splintering of the real-time community raised concerns among users contemplating the use of Java in their embedded devices. The real-time Java extension is critical for embedded devices that need to be able to predict when certain events stop and start.

Once you choose one group's embedded Java version "you can't switch," said Karl Manon, a software engineer at Allied-Signal Inc.'s aerospace division. Manon can't use regular Java because the aircraft engine controllers he programs need to respond quickly to changing conditions. Right now Manon uses C++, but he said he's considering Java for portability reasons.

Joe Sullivan, a software developer at Argonne National Laboratory in Illinois, said the dueling standards might make his group delay a decision on Java.

Fermi National Accelerator Laboratory in Batavia, Ill., which has selected Java as the preferred implementation language for its next-generation system, simply plans to stick with Sun. "We're committed to 100% Pure Java. We want 'write once, run anywhere,'" said Duane Voy, a programmer at the lab.

James Bell, general manager of HP's embedded software operation, charged that Sun has no intention "to genuinely open the process."

"We invested Java. We prototyped it. It's got real value out there in the world. And now other people want it," Sun vice President Jim Mitchell said. □

PeopleSoft casts a wider net

► But users aren't clamoring for new apps yet

By Craig Schoeman
San Francisco

PEOPLESOFT INC. is charting a course that goes beyond back-office enterprise resource planning into data analysis and electronic commerce. Now the company has to persuade users to go along for the ride.

At PeopleSoft's annual user conference here last week, a half-dozen attendees said they weren't instantly sold on the new applications that the Pleasanton, Calif., vendor plans to release next year.

The challenge for PeopleSoft is twofold, analysts said. Much of its user base consists of human resources departments that need to do just such basics as benefits administration. And many of the manufacturers that have bought PeopleSoft's newer planning and production management applications are still busy installing them.

"For example, Corning Inc. is making a huge commitment to PeopleSoft's applications, but running the Corning, N.Y., manufacturer's corporate human resources and finance systems and are starting to be installed at its 30 manufacturing units.

But that rollout could take five years or more to finish, said Rick Beers, strategic process leader for supply-chain operations at Corning. And the focus is more on improving inventory planning and on-time order delivery than on adding even more applications, he said. "Right now, we're going to be looking at the basics."



On the other hand, Borden Chemicals and Plastics gets all it needs from PeopleSoft's human resources and payroll applications. The Baton Rouge, La., company even outsourced its PeopleSoft systems because those functions "aren't core to us," said Clio Dunn, director of information services at Borden Chemicals.

For its more vital finance and manufacturing applications, Borden Chemicals is installing software from PeopleSoft rival

J. D. Edwards & Co. Up to 700 employees will have access to the J. D. Edwards OneWorld system, compared with about 15 for PeopleSoft's applications, Dunn said.

Included in PeopleSoft's plans are a data warehouse, a series of packaged analytic applications and personalized intranet software akin to Yahoo and other Internet portal sites. Much of that isn't due until late next year, though.

One user that expects to be onboard is American Century Investments. The Kansas City, Mo.-based mutual funds company, which uses PeopleSoft's finance and human resources software, is beta-testing an activity-based costing application that is scheduled for release in the first quarter of next year.

Installing the analysis software would be like putting in "a whole new accounting system," said Eric Bur, chief accounting officer at American Century. "But it could let us know how much profit we're going to make going into a sale. Pricing decisions are just made by intuition now." □

PeopleSoft, other vendors pitch value-based software pricing at users. Page 1

Storage-area nets kick into high gear

By Nancy Dillon

STORAGE-AREA networking is slowly but surely moving from pie-in-the-sky to tools-on-the-table.

Last week, EMC Corp. in Hopkinton, Mass., announced software to boost storage-area networking (SAN) security as well as support for several SAN hubs. And networking giant yCom Corp. in Santa Clara, Calif., announced its entry into the SAN fray with a product line due early next year.

Analysts said the news supports projections for a booming SAN market. "[We] forecast that 77% of external server storage sold in 2002 will be in a storage network," said Robert

Gray, an analyst at International Data Corp. in Framingham, Mass., a Computerworld sister company.

A SAN is like a back-end LAN that connects servers or clients with shared storage devices. Users can build SANs with other interfaces, such as Escon, but Fibre Channel is generally favored due to improved maximum distances and transfer rates (100m and 100M byte/sec., respectively).

EMC's new software, called Volume Logix, mediates access to storage volumes in shared subsystems. It is targeted at Windows NT storage networks because NT servers lack secure volume sharing and try to "own" all connected storage.

NO MORE OVERWRITES

With Volume Logix, EMC officials said users can connect multiple NT servers to a single point on an EMC Symmetrix array via a hub, without the worry of overwrites. Fibre Channel hubs now supported by Sym-

metrix include those sold by Hewlett-Packard Co., Compaq Computer Corp., Dell Computer Corp. and Siemens AG.

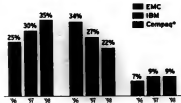
"We have a few NT servers connected to Symmetrix right now, and as we get more, it will make sense to go in through one point of contact, such as a 'hub,'" said John A. Hansberry, CIO at Brown & Williamson Tobacco Corp. in Louisville, Ky. "But we'll need software to manage it."

In September, Hanaberry's group consolidated 1.4T bytes of multipplatform storage on several EMC boxes. He said the effort was his first step toward a Fibre Channel SAN.

Thomas Lahive, an analyst at Dataquest in Westboro, Mass., said EMC's Volume Logix announcement is the first of its kind among the major disk array suppliers. "It will make EMC's penetration of the NT-based SAN market much easier," he said.

yCom said it plans to release both a Fibre Channel hub and a

External RAID market share 1996-1998, by revenue



Total revenue: 1996, \$7.4B; 1997, \$7.7B; 1998, \$9.3B

*Includes combination of Compaq, Digital and Tandem

Sources: Dataquest, San Jose, Calif.

server host adapter in the first quarter of next year. Developed through partnerships with Fibre Channel veterans such as Gadzooks Networks Inc. in San Jose, Calif., the products will start yCom's new StorageConnect line and work with yCom's Transcend network management software. The goal is to integrate all aspects of LAN, WAN and SAN management.

Mark Purdy, chief technology

officer at Bloomberg LP's stock-ticker plant in New York, called the announcement "critical."

"I think people are looking to mix IP and SAN protocols on the same physical layer, and splicing these two together is a nasty subject," Purdy said. "We'll need experienced companies to help untangle the mess."

Lahive said the yCom news means "users can now capitalize the 'N' in 'SAN.'" □

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Users to Web merchants: Cut some prices

► Consumers cite cost as top obstacle to online purchasing

By Sharon Machlis

WHAT WILL ENTICE online window-shoppers to finally fork over their credit-card numbers and make their first

purchase on the Web?

The No. 1 consumer inducement isn't better security or more user-friendly sites, according to a survey by Jupiter Communications Inc. and NFO World-

wide Inc. It's lower prices.

In fact, the 77% of Internet surfers who haven't bought anything online said better discounts could persuade them to buy. Sixty-five percent cited more security, followed by ease of finding items (35%), comparative product data (30%)

and easier ordering (15%).

But that doesn't mean Web sellers should slash prices across the board, said Ivan Cohen, a research director at Jupiter in New York. "We recommend strategic discounting," he said. That's similar to retelling in the physical world, where an electronics store might slash prices on music CDs to get customers through the door.

Targeted discounts have proved very effective at Garden Escape Inc., said CEO Cliff Sharples. The company offers free gardening information as well as products for sale.

In one promotion, Garden Escape selected registered members who regularly visited the site but hadn't bought anything and offered them a \$20 discount for a first purchase. More than 20% of those members then placed an order — a huge response for a direct-marketing campaign — and some have already made repeat purchases.

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and delivering the best solution is what Lexmark is about. J.D. Edwards is about the same thing. Every contact we had with them was with people who were committed to making Lexmark's success."

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How it ought to be

Dr. Paul J. Carlsfelder
President and Chief Executive Officer
Lexmark International

Features that could convince online window-shoppers to buy something:

Better prices	77%
More security	65%
Easier-to-find items	35%
Comparative information	30%
Easier to order	15%
Faster delivery	14%
Better presentation	12%
Nothing	6%

Source: Survey of 3,500 youths and adults; multiple responses allowed

Source: Jupiter Communications Inc., NFO Worldwide Inc., both in New York

Garden Escape in Austin, Texas, is now tracking those newly acquired buyers to determine their "lifetime value" to the site, Sharples said.

Garden Escape also discovered that many first-time buyers were calling for help with ordering because the process was too complex. But the \$20 discount had encouraged them to try to learn it. "That was a real eye-opener for us," Sharples said. Garden Escape subsequently overhauled its online ordering.

Daily specials at iBaby.com "do drive trial purchases," said Elaine Rubin, chairman of baby products retailer iBaby Inc. in New York. "But there are other ways. How do you do it in the real world? With some kind of offer. It doesn't have to be price." It can be convenience — a big plus for new parents — selection or a service such as gift reminders, she said.

Clothing retailer Eddie Bauer Inc. in Redmond, Wash., determined early on that it would keep prices consistent across its stores, catalogs and Web site, but its site does have a small "weekly special" bargain area. □



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Beauty product sites facing channel clash

By Sharon Machlis

THE ESTÉE LAUDER CO. IS JOINING a growing number of multi-billion-dollar manufacturers testing the electronic-commerce

waters and selling directly to consumers. But like most, the company is still cautious about preserving lucrative, long-term relationships with retailers.

"You've always got to remember who brought you to the dance," said Angela Kapp, vice president of special markets and new media at the New York cosmetics firm.

Estée Lauder's upscale Bobbi Brown line launched an online store last month, but the site doesn't bypass department stores. Instead, Neiman Marcus Group, the Dallas-based retail chain, will handle all shipping and customer service for the Bobbi Brown site.

But when the larger Clinique brand debuts its commerce site this month, Clinique will oversee its own shipments.

Clinique originally planned to parcel out orders to various major department stores but scotched that idea because of customer-service concerns and problems with exchanging order information.

"Data transfer is never an easy issue. When you add multiple partners, it becomes more complicated," Kapp said.

Different stores have varied data formats for handling orders, and devising a system to accommodate them all was a challenge. Retailers ultimately understood the problem, according to Kapp. In fact, Macys.com will launch a revamped shopping site this fall that will sell Clinique products.

"In the long run, people will buy Clinique from more than one site," Kapp predicted, just

as most now buy products from more than one store.

Channel conflicts are cropping up across the Internet, disrupting everything from auto dealer territories to stores facing

first-time competition from manufacturers of the products they sell.

In the case of the cosmetics and skincare industry, the retail channel is crucial because the sales associates behind the counter not only advise women on products, but often also persuade them to buy more than they had planned.

Clinique will start selling products on its Web site to cause many users were asking to buy online, according to Kapp. But the site will continue to work to drive foot traffic into the stores.

And, when asked if Clinique's popular free gift offers will be available on the Web, Kapp responded, "Over my dead body."

KIND TO RETAILERS

"Channel conflict will continue to be a real issue for these kinds of companies," said Nicole Vanderbilt, an analyst at Jupiter Communications Inc. in New York.

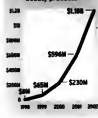
But "Clinique is being very careful not to threaten their retailers... by not offering gift promotions on their own site and by not advertising the online storefront off-line," she said.

Avon Products Inc. faced an other type of channel issue when it started selling products online last year, because much of its business comes from local sales representatives.

Avon accommodated the sales representatives in part by creating special areas of the site for them, with updated information and places to exchange messages with other reps.

BEAUTY AND THE NET

Online shopping revenue projections for health and beauty products



Source: Jupiter Communications Inc., New York

Avon.com has 300,000 registered users and receives 1,500 to 2,000 E-mail messages a month. "It's a small percentage of our business today, but it's growing rather exponentially," said Adrian Dessi, senior director of direct access at Avon in New York.

Jupiter predicts that, overall, online sales of health and beauty products will grow from \$3 million this year to \$250 million by 2000. □



Estée Lauder's Angela Kapp: Preserving retailer relationships is key



HP reorg to focus on visibility

At \$15 billion and 40,000 employees, Hewlett-Packard Co.'s new Enterprise Computing Solutions Organization, which merges its hardware and software divisions, is larger than Sun Microsystems Inc. It will be responsible for delivering integrated hardware, software and consultancy services targeted at markets such as enterprise resource planning and Web commerce, said Ann Livermore, the group's vice president and general manager. Livermore, 40, discussed the reorganization with senior editor Jeannette Vijayan.

On the task of integrating HP's highly autonomous business units: One of the most important things is getting the balance between what needs to be centralized and what need not be centralized. We will continue to have a lot of [unit-level] decision-making decentralized... but it is important to have some of the business planning and some of the marketing strategies and outbound marketing messages be more centralized in execution.

On making HP a more visible industry player: One of our objectives is to get more mind share around our products... You are going to see us get a lot more aggressive and clear in our messages. You will definitely see people like myself making sure that HP has a more visible presence.

On what drove the reorganization: When you've got different groups that work a lot together, have a common customer base, common set of competitors, common products and services... then you should manage them as one business. It follows you to put all your word behind one arrow. □

Consumer Reports bucks Web trend

■ Subscribers ponying up for online information

By Sharon Machlis

DESPITE THE widespread belief that people won't pay for information on the Web, Consumer Reports Online said it has signed up 180,000 subscribers in its first year.

"If the information is really good and people really want it, that's certainly going to make it attractive," said Nancy Macagno, director of new media at Consumer Reports, the Yonkers, N.Y., nonprofit organization that publishes Consumer Reports. "If they want it in their real lives, they'll pay for it. That's true in any medium."

POPULAR SITE

The site is adding about 5,700 subscribers per week, making it one of the most popular subscription services on the Web (www.ConsumerReports.org).

Consumer Reports magazine offers articles, advice, recommendations and product test results.

Online subscribers pay \$4.95

per month or \$24 annually; for those who already receive the print magazine, online subscriptions cost \$19 annually.

In general, it hasn't been easy to persuade people to buy news online.

"There aren't too many success stories in people charging for content," said Patrick Keane, an analyst at Jupiter Communications Inc. in New York.

Consumer Reports' proprietary test data on high-ticket items such as cars and home appliances is attractive to people who like to use the Internet for researching major purchases.

A few other specialized sites also are making inroads.

The Wall Street Journal Interactive Edition, considered the genre's biggest success, has more than 350,000 paying sub-

scribers. Analysts say the financial news area is one of the most promising because investors have been willing to pay money to potentially earn more money.

Another niche player attracting paying users is Ancestry.com Inc. in Orem, Utah, which charges \$19.95 per year for genealogy researchers to access multiple historical names databases.

The company doesn't release subscription figures, although one outside estimate pegs them at around 50,000.

Consumer Reports Online isn't breaking even yet, but it has been beneficial in generating new business for the organization, Macagno said.

There's a very small overlap with our magazine subscribers. We believe we are attracting new people to Consumer Reports," she said. □



Consumer Reports' Nancy Macagno said people will pay for good content

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Microsoft® Windows NT® Server 4.0 was released two years ago. Today, 61% of networked companies in the U.S. are using it. And, Windows NT Server 4.0 currently outsells all other server operating systems. Why?

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As you make your server OS decision, know that companies are choosing Windows NT Server because it handles basic networking and the ever-changing needs of the business environment.



Doctors, hospitals scarce on Web

► Limited budgets hinder upgrades of older sites

By Barb Cole-Gomelski

CONSUMERS ARE turning to the Web for health care information, but in many cases the doctor isn't in.

Although a plethora of health-related sites have sprouted in the past year, most physicians and hospitals have yet to move online.

"The reality is that most of us are playing catch-up on some basic systems that we've neglected," said Terry Wilk, CIO of Fairview Health System, which operates two hospitals in Cleveland.

Wilk said Fairview has a basic Web site, which "hasn't received many hits." But building a

more elaborate site—which could highlight the hospital's services and staff and provide general health information—is at the center of the question for at least the next two years, he said.

NOT HIGHEST PRIORITY

Aside from completing year 2000 work, the bulk of the hospital's information technology budget is going toward network upgrades, Wilk said.

Many hospitals are in the same position, dealing with limited budgets and antiquated systems. That presents a challenge because, increasingly, patients are turning to the Web when selecting a physician, researching a disease or looking for a

patient-related support group.

According to the U.S. Department of Health and Human Services, the number of people using the Internet for health care information rose 39% from 15.6 million last year to 21.7 million this year.

At an Intel Corp. press conference about health care and the Internet, former U.S. Surgeon General C. Everett Koop said the Web will result in a power shift in medicine. "In the past, the doctor was the authority, and the patient was passive," Koop said. "Now, the patient comes to the doctor with information he has collected on the Internet."

But even some of the nation's top medical facilities are struggling in the Net arena. The Mayo Clinic in Rochester, Minn., launched its Oasis Web site about three years ago as a place where users can research health issues and exchange E-mail with Mayo physicians. Although the advertising-supported site has been extremely popular—it was visited 800,000 times last month—it has yet to turn a profit, said Brooks Edwards, medical editor of the site.

Moving health care to the Web raises issues about the credibility of the information and the confidentiality of any E-mail that is exchanged.

On Mayo's site, all the material is reviewed by three physician experts from the clinic's

staff of 2,000 doctors. But many regional hospitals don't have such large staffs, Brooks pointed out.

The security and privacy of Internet E-mail also is a big concern.

Mayo generally discourages doctors from trading E-mail messages with patients, but Brooks said that will change when E-mail systems become more bulletproof.

Another E-mail-related issue that may be harder to overcome is that "a lot of doctors resist it because they just see it as another drain on their time," said Scott Rentsch, an analyst at Cyber Dialogue, a New York-based research firm. □

MORE ONLINE

To find out about resources, publications and organizations related to health care and information technology, visit Computerworldonline.com. www.computerworld.com/news

Lotus moves into Web era with Notes 5.0

Publicly, Lotus Development Corp. has spent much of the year bailing Microsoft Corp. for bragging rights as the top E-mail vendor, as users have begun to consolidate on the two companies' products at the expense of other vendors' software and Lotus' own CC-Mail.

But internally, Lotus has focused on a major rewrite of its Notes messaging system to bring it into the Web era while at the same time continuing its integration with parent company IBM.

Computerworld senior writer Roberto Fiasco spoke last month with IBM Vice President Mike Zisman on Lotus efforts.

On the impending release of Notes 5.0:

Version 5.0 is the most important release of Notes since Version 1.0 because it's the first version of Notes that was really conceived of and designed in the Web era. . . . Notes 5.0 brings together all the benefits we have in messaging and collaboration, but in the context of a Web user model.

It's a substantial change in user interface, but if you want, you can click a button and go back to the old Notes interface. . . . It looks like a browser, has native HTML (the Web programming language) and, for many users, it will become

their native browser.

On the CC-Mail market:

We made a conscious decision that we weren't going to force CC-Mail users to migrate, because there was a very high level of angst on the part of CC-Mail customers for years leading up to the notion that Lotus is trying to get us to move to Notes when we just want mail."

But at some point, that file share technology won't scale anymore. We continue to improve CC-Mail, but at the same time we've built migration tools.

In the past six to 12 months, we've said, "OK, it's time." We've taken CC-Mail a long way, but we think with the tremendous offerings in Lotus Notes and Domino, the reasons to migrate are compelling, and the tools are in place.

On restructuring at Lotus:

We're having some employee [layoff] because we're integrating with IBM in some basic infrastructure areas. And that's because Lotus is going to find all the efficiencies we can, integrate more effectively with IBM and reduce operating expenses, and shift that expense to product development, sales, marketing and support. □



Former Surgeon General C. Everett Koop says Web sites can help better inform patients about health care options

Zapped by Zip, SyQuest shuts down

► Analysts cite Iomega drives and market glut

By Nancy Dillon

REMOVABLE-STORAGE vendor SyQuest Technology Inc. announced last week that it is removing itself from the industry it helped create.

Officials said the Fremont, Calif., company had suspended operations and is considering bankruptcy. The company asked the Nasdaq Stock Market Inc. to halt trading of its stock, which last closed at 34 cents, down from a 53-week high of \$4.44.

Some industry watchers said the death knell first sounded in August, when SyQuest let go 80% of its workforce.

"SyQuest's problems started three years ago when the Zip

first came out," said Para Yael, an analyst at Dataquest in San Jose, Calif. SyQuest tried to react by pricing its EZ335 hard drive to compete against the Zip floppy drive from Iomega Corp. in Roy, Utah. "But essentially they were selling it at a loss," Yael said.

She said other factors contributing to SyQuest's failure included an industrywide oversupply of fixed, rigid disk drives; the rise of rewritable CDs; and SyQuest's failure to establish a strong brand name.

Jim Porter, an analyst at Dink-Trend Inc. in Mountain View, Calif., said SyQuest is the casualty of an overhyped and underdelivered market. Only about

5% of PC users want a removable, high-capacity hard drive along the lines of Iomega's iG-byte Jaz or similar SyQuest products, he said.

And considering Iomega's dominance during a time of market size correction, the SyQuest announcement isn't a shock, Porter said. Last year, Iomega shipped 818,000 Jaz drives, whereas SyQuest shipped only a total of 237,000 drives, he said.

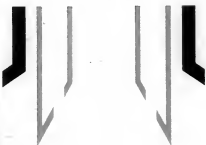
That doesn't mean that Jaz will rule unchecked. Castlewood Systems Inc., started two years ago by ousted SyQuest founder Syed Iftikhar, is about to release a iG-byte removable hard drive, called Orb, and is expected to compete with market leader Iomega, Porter said. □



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KERNEL VS. MICROKERNEL

In operating systems such as Windows or most versions of Unix, the kernel includes everything except application and utility programs



In microkernel operating systems such as Digital Unix and Apple's forthcoming Mac OS Server, the kernel itself supports only multitasking and memory management. Other services such as applications, utilities and the user interface support device drivers, API and graphics which all reside outside the microkernel



Kernel technology

DEFINITION: The kernel is the core of an operating system such as Windows 90, Windows NT, Mac OS or Unix. The kernel provides basic services for the other parts of the operating system, making it possible for it to run several programs at once (multitasking), read and write files and connect to networks and peripherals. Applications and utility programs use the services provided by the kernel to provide practical business functionality.

Heart of OS being pulled in different directions

By Frank Hayes

APPLICATIONS PUT computers to practical business use, but below the surface it's the heart of an operating system — the kernel — that provides the technical wizardry to juggle multiple programs, connect to networks and store data.

A traditional kernel provides all the functions for applications. The kernel manages memory and files, connects applications to I/O devices and parcels out processor time.

The kernel also supports security and fault tolerance, which is the ability to recover automatically when parts of the system fail. "If you don't have [all these functions] in the kernel, there are really things users can't do," says Greg Weiss, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y.

Whether it's a single program or a collection of executable files, all parts of the kernel run in "kernel mode," with access to system data and hardware. By contrast, applications run in "user mode," which allows them access to their own sections of memory.

Applications use kernel functions through application programming interfaces (API), which are a set of standard routines used by programs. Each kernel contains its own APIs — which is why Windows software won't run on an AS/400, even if the processor is the same.

System vendors continue to cram more functions into their kernels. Macromail, for example, is adding both a database and Unix APIs to its Windows NT kernel.

Putting such support in the kernel usually makes those functions faster and more robust, says Jean Botman, an analyst at International

Data Corp., a sister company to Computerworld. "If you were to integrate a Web server into the kernel, you'd see real benefits from that," she says.

But as more and more capabilities are shoehorned into the kernel, it's harder to produce operating systems that can be maintained, enhanced — and delivered to customers on time.

It also makes kernels huge, complex pieces of software that are hard to enhance without adding bugs.

That's why several major vendors — including Sun Microsystems Inc., Digital Equipment Corp. and Apple Computer Inc. — are trying a new approach to operating system design: the microkernel. In a microkernel,

only a few crucial functions, such as managing how memory and processor time are divided among applications and communications between software processes, run in kernel mode.

All the rest — file systems, networking, device drivers — run as applications. That keeps the kernel small and simple, making it much easier to maintain (see chart at left).

Microkernels are suitable for massively parallel systems, meaning systems that use many processors to run one application. But performance can suffer, because file systems and device drivers can't directly access all the system data the application needs.

The path to a smaller kernel isn't easy. IBM tried and failed with its Workplace OS, and Microsoft has steadfastly refused to shrink Windows NT's kernel.

But if the microkernel really is as flexible and maintainable as its proponents say, microkernel architectures could be a big help in getting new operating system releases out the door on time and with fewer bugs. □

AT ISSUE

Kernel's complexity spawns simpler microkernel

Types of kernels in major operating systems

VENDOR	OPERATING SYSTEM	TYPE OF KERNEL
Microsoft	Windows 3.1	Large kernel
Microsoft	Windows NT	Large kernel
Apple	Mac OS Server (mpowd)	Microkernel
Compaq/Digital	Digital Unix	Microkernel



What's more important: the present or the future?

Both. The companies and partners who support Microsoft Windows NT Server 4.0 are integral to the development of Windows 2000 Server. So if you base today's solution around Windows NT Server, you'll have a solid migration path for both your network and your applications. And you'll know that the industry you are counting on will be with you down the line.

As you take the time to make your server OS decision, you may want more detailed information. We've assembled some new resources for you at the Web address below.



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www.microsoft.com/go/WindowsNTServer/

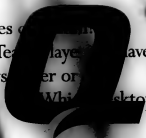
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OPINION

Life without users

That has to be what some ERP vendors are secretly thinking these days. Why? Because as more enterprise resource planning software goes live across our great land, the unpleasant truth is looking out.

Those wildly popular, tightly integrated business software systems aren't only complex and costly to install — they can be hell on earth to actually use. Once they slip from the highly trained hands of the experts and into the clumsy grasp of ordinary people such as business managers, salespeople or leading dock workers, everybody gets a good splash of reality.

ERP buyers can get blindsided by the amount of user training required. After the system goes live, calls to the help desk skyrocket. Worker productivity may take a powder. Your whole company is likely to be in an uproar for months as you force-fit your

business processes into a new mold.

Our front-page story in last week's issue detailing Hydro Agri North America's experience ["ERP user interface drive workers nuts"] was only the latest real-

world example of how steep the downside of ERP packages such as SAP's R/3 can really be. The chore of navigating through six R/3 screens to enter data was slowing workers down and actually threatening the quality of customer service at the company's fertilizer stores in Canada.

Similar scenarios have played out at companies with new installations of ERP applications from PeopleSoft, Baan, Oracle, J.D. Edwards and others. This is the politically incorrect part of the ERP Magical Mystery Tour — the part that vendors with our readers would quit complaining about and Computerworld would quit writing about. Let's not dwell on those pretty easy-to-use issues. Let's focus on the shimmering promise of incredible business benefits, shall we?

Well, no thanks. We'll keep writing about both sides of ERP and about the business clash of two contradictory trends. Users are clamoring for simplicity and ease of use. Vendors are delivering complexity and steeper learning curves.

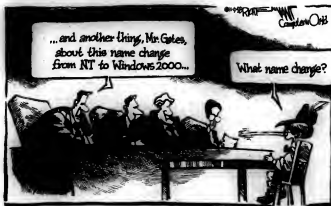
Somebody's got to keep pushing for some hard-core honesty from both sides. We cheerfully volunteer.



Maryfran Johnson, executive editor
Internet: maryfran.johnson@cw.com

...and another thing, Mr. Gates,
about this name change
from NT to Windows 2000...

What name change?



LETTERS

John Gantz is leaping to the wrong conclusions

JOHN GANTZ'S Sept. 28 column does the IT industry a disservice. I have never seen a date field that would store Sept. 9, 1999, as 9999. Date fields are usually six characters and would store it as 090999 or 990909. Year 2000 problems are a headache, but let's not put out information that is not true. We have a hard enough time making managers and users understand that there is a real problem, without adding hype that is only meant to put money in the pocket of the "guru" who put out the information.

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IN HIS ARTICLE "Year 2000 is just the beginning" [CW, Sept. 28], John Gantz perpetuates the myth that there will be problems on Feb. 29, 2000, because legacy pro-

grams might not understand that the year 1900 is a leap year but 2000 is not. If year 2000 were not a leap year, we might have a problem. But since it is a leap year, most legacy programs will get it right by accident.

Why? Most legacy programs simply check to see if the year is divisible by four and ignore the century exceptions altogether. If a legacy program is going to have a problem, it is more likely because it took some shortcut, like checking for specific years or checking only to see if the final digit of the year is divisible by five. This caused a problem in 1990 but would work in 2000.

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Employers should treat programmers like lawyers

CORPORATE AMERICA is, once again, shooting itself in the foot ["Are IT beggars too choosy?" CW, Sept. 21]. Since executives do not yet understand that their programming team is as important to the survival of the corporation as the legal team, they are not paying enough (i.e., the same as lawyers) to retain programmers.

As a result, programmers keep leaving. Instead of the executives admitting their error, they assume there is something wrong with the people they hired. As a result, they are tougher on new hires, which causes new hires to look elsewhere for work. No one wants to work for

the Spanish Inquisition!

Apparently, anyone who can become a lawyer — the country is flooded with them. Yet no one blinks at a lawyer who makes six figures. It seems few people can become programmers, as there is a shortage of them, but six-figure salaries are regarded as a sort of aberration. It is time for corporate America to face facts: If programming were easy, everyone would do it. People who do jobs that aren't easy should be well paid.

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Chicken Little Hayes is right, for the wrong reasons

IN THE Sept. 28 issue of Computerworld, Frank Hayes suggests shutting down all systems just prior to midnight Dec. 31, 1999, and restarting them some time after midnight ("The year 2000 reboot"). I agree, but his reasons are more vague and of "the sky is/may be falling" classification.

There are more specific and pragmatic reasons. Systems that won't fall after the rollover period may fail during the rollover. Also, data files, notably accounting files, transaction logs and backup files, which are not closed out (likely copied to removable media) before the century rollover may expose problems when that data is processed later.

In both cases, the vendor or internal programmers responsible may have determined that dealing with rollover situations, as opposed to dealing with dates after Dec. 31, 1999, separately, is not feasible — and properly issued warnings about that.

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Computerworld welcomes comments from its readers. Letters shouldn't exceed 400 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01901. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Why Microsoft must be stopped

Ralph Nader and James Love

Everyone who uses a computer or depends on computers has an interest in seeing Microsoft's anticompetitive and anticonsumer practices curtailed by antitrust authorities.

Microsoft's claim that it's defending its right to innovate is a cruel joke in an industry that sees its best innovators attacked by the company's anticompetitive actions. Microsoft's agenda isn't innovation, it's limitation, as well as the imposition of suffocating control over user choices and an ever-widening monopoly.

If the government can't curtail Microsoft's anticompetitive conduct in the browser market, the company gets the green light to become even bolder elsewhere. And for Microsoft, elsewhere is just about everywhere. It isn't only the browser market, it's virtually any mass-market software application, all server products, programming languages and the growing fields of electronic com-

IT, the industry and consumers will benefit from more diversity and less monopoly.



merce, multimedia publishing and Internet navigation. Companies spend enormous resources anticipating and responding to Microsoft's use of restrictive contracts, strategically shifting standards, manipulation of product compatibility and other forms of monopolistic warfare. That

mercy, multimedia publishing and Internet navigation.

Companies spend enormous resources anticipating and responding

detracts from efforts to innovate or improve existing products. The victims of Microsoft's monopolistic activities aren't just the companies that go belly-up; they are the consumers who pay high prices to use mediocre and unreliable products.

Microsoft's public relations machine has tried to paint the antitrust laws as outdated and irrelevant in the fast-paced computer industry. But antitrust laws were created in response to the new technologies of the industrial revolution, and they have been a factor in each new wave of technology. We still embrace the Bill of Rights, which is much older than the antitrust laws. What's critical for antitrust enforcement is to find remedies that

address the sources of anticompetitive conduct and are appropriate for an industry with short product cycles, changing product definitions and production innovations.

If there are criticisms of the legal case against Microsoft, they are that it was initially too narrow and that the government has been slow to suggest remedies for Microsoft's conduct.

In the 1995 agreement between the Justice Department and Microsoft, the government settled for minimalist and

ineffective remedies that didn't address major sources of Microsoft's power.

Fortunately, antitrust authorities can avail themselves of a plethora of remedies for Microsoft's anticompetitive conduct. Even in the area of anticompetitive conduct, Microsoft is mainly an imitator.

Drawing from past antitrust actions in the computer, software and other industries, the government could require, among other things, divestitures; nondiscriminatory sharing of APIs and other technical information, such as data file formats; "Chinese walls" between the developers of operating systems and applications; nondiscriminatory licensing; and required support for or noninterference with nonproprietary Internet protocols.

Ultimately, the industry will benefit from more diversity and less monopoly.

We need to build on the lessons from the Internet and stop Microsoft's efforts to transform the Internet into a private network dominated by a single, ruthless company. □

Nader is a consumer advocate in Washington. His Internet address is ralph@consumer.org. Love is director of the Consumer Project on Technology in Washington, which uses Linux. His Internet address is jlove@cpctek.org.

The night the lights went out in Georgia

William Ulrich

Whether working with corporate clients or interacting with community task forces, one thing is clear: People are becoming increasingly polarized regarding the questions of if, and for how long, the power will stay on in the year 2000.

People also disagree on communication, financial, water filtration and transportation system viability, but those functions all rely on power.

The collective effort being applied to corporate contingency planning, the creation of backup systems and community power audits is immeasurable. Corporations are going through great pains to ensure business continuity in the face of power failures. Hospitals, data centers, water processors and other sites are building backup systems. And community groups are attempting to stem citizens' fears of power outages in the next century. Why can't we get definitive answers regarding power continuity?

Sen. Robert Bennett (R-Utah), chairman of the Senate Special Committee on the Year 2000 Technology Problem,

reported last June that he was "genuinely concerned about the prospects of power shortages." The North American Electric Research Commission recently issued a report that, on the surface, was fairly optimistic. But digging deeper into the report leads to the conclusion that many site assessments are still under way.

Discussions with some "industry experts" lead me to believe that safety-related systems contain few chips with date dependencies. But some chips "inherited" latent date functions from other chips that may remain active and eventually could fail. And non-safety-related monitoring and communications systems aren't date-free and could force a plant into a state where it must shut down because of the inability to assess the plant's status.

A look at the Nuclear Regulatory Commission's Web site also raises concerns. A nuclear site at Monticello, Minn., was reviewed this year and the results were posted on the site. The year 2000 status of a large majority of the technology listed for the Monticello nuclear site was listed as "unknown." Because the status of other nuclear facilities was incomplete, we can assume only that nuclear power communication research is lagging.

The Electric Power Research Institute stated on its Web site that "major disruptions in technical and business operations could begin as early as January 1, 1999." Concerns also center on the readiness of local power companies that lag behind their larger counterparts.

Complicating the issue further is the fact that traditional power

companies in some states are morphing into power brokers. Californians, for example, have a wide variety of power sources to choose from. Yet they pay their bills to Pacific Gas & Electric. It's getting harder to tell from where your power originates.

The situation as it stands is untenable. The federal government must take more definitive action in determining the exact status of facilities. If power plants are going to be shut down, then corporations, schools, governments, nonprofits and citizens need to know. If plants have been checked out and certified compliant, we want to see the data.

So far, answers are inadequate. They force firms, government agencies and citizens to expend a massive, collective amount of energy on contingency planning. It's time to get the facts on power continuity. □

Ulrich is president of Tactical Strategy Group Inc. and executive vice president of Tactical Research LLC. He is co-author of *The Year 2000 Software Crisis: Challenge of the Century* and *The Year 2000 Software Crisis: The Continuing Challenge*. His Internet address is enginc@crusis.com.

We need straight answers regarding year 2000 power continuity.

Data privacy protection must start with IT

Dan Gillmor

You've probably never heard of John Borking. But his work may soon have an impact on yours.

Borking is vice president of the Netherlands' Data Protection Authority, a quasi-governmental body charged with enforcing that nation's strict rules protecting residents' privacy against intrusions from government and business.

Among privacy advocates, he has a global reputation for his combination of passionate advocacy for protecting people's data and, as a former corporate executive and head of a computer trade organization, a practical sense of how privacy and business needs can coexist.

That balance is utterly lacking in the U.S. Here, the most private information about you, me and our loved ones has become nothing more than a commodity to be bought, sold and traded.

But new European Union (EU) rules — which take seriously the idea that we

Combining law and technology means involving IT at the very beginning of the database process.

have a right to restrict the way our personal information is used by others — will soon have a dramatic impact here. And information technology, which has been in the middle of creating the problem through the proliferation of databases, will be central to solving it.

The European Data Privacy Directive, which took effect Oct. 25, says, among other things, that no one may transfer a resident's personal data to another country unless that country has taken adequate steps to guarantee that private information stays that way. U.S. companies

don't begin to meet that standard, and the threat is that Europe could place itself out of bounds to U.S. businesses in key parts of international commerce.

The EU has agreed not to enforce the directive against U.S. companies temporarily while negotiations proceed.

But the American attitude remains altogether too smug: anyone who thinks the EU is going to back down on a matter its citizens consider central to their lives is making a serious mistake. (One of

the ironies of modern life is that the Europeans are considerably more casual than Americans about governmental invasions of personal privacy, even as they're much stricter about protecting themselves from corporate misconduct in this area.)

I visited Borking at his office in The Hague this summer. He surprised me when he said that mere laws couldn't adequately protect privacy and that it would be naive to think so in today's high-velocity world. "We need a combination of law and technology," he said. "My concern is that technology is mov-

ing so fast that the law can't keep up with it." Combining law and technology means involving IT at the very beginning of the database process — not trying to bolt on privacy after the problem is already apparent. Borking said. He pointed to several experiments now under way in the Netherlands as proof that it can be done.

The most intriguing was a new record-keeping system at the Veldwijk Hospital, a psychiatric institution in central Holland. A system there keeps patients' individual records secure but allows researchers to easily aggregate data on illnesses as they search for better treatments.

U.S. businesses fret that modern commerce itself will be threatened if people have their privacy. I agree with Borking, who believes that attitude is the exact opposite of reality. Information and electronic-commerce systems, which will be at the heart of tomorrow's economy, are based on trust. Break that trust, Borking said, and the "parts of society based on these systems will collapse." □

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Web competition may look frighteningly familiar

David Moschella

The merger of music retailers CDnow and N&K, the joint venture between Bertelsmann AG and the online division of Barnes & Noble and the impressive growth of Amazon.com raises the question:

Will competition in cyberspace be more, less or similarly concentrated than that which has emerged from the physical world? It's a question that affects nearly every business.

There's often an unstated assumption both on Wall Street and within our industry that Web-based markets will resemble other high-tech sectors. We tend to think that each segment will have a dominant leader — a "gorilla," to use author Geoffrey Moore's popular phrase. My own view is that that will indeed prove true, but only in a surprising and, for investors, somewhat dispiriting way. To see why, let's take a closer look at today's pre-Web competition.

The pattern is clear: Software markets usually are very concentrated, with a clear gorilla in each category. In contrast, markets for pure hardware (as opposed to mainframes and routers, where a lot

of software is also involved) tend to have a handful of relatively strong rivals. Finally, the professional services business is highly fragmented, with tens of thousands of companies. Not surprisingly, profit margins are generally highest in software, steady in services and quite scarce in hardware.

This pattern is well-explained by classical economics, in which high levels of industry concentration generally stem from strong scale economies or those with high barriers to entry, with the latter being more important. Consider that hardware has moderate barriers to entry and moderate scale economies, whereas with services, both factors are low. But software has effectively infinite scale economies, while the need for compatibility and user training often imposes huge barriers to new competition.

I believe that Web-based businesses effectively constitute a fourth class of company and thus will likely have their own pattern of competitive structure. In previous columns, I have used the word "sewerage" to describe the Web's dominant structural aspect: that it uses software (and often content) to provide a service.

Thus, the obvious question is whether competition on the Web will be more like that in the software or services market. It's clear that barriers to entry on the Web are very low indeed. Anybody can set up a business quickly, and there's essentially little of the customer lock-in that so heavily affects the software business. One could argue that brand, marketing and

awareness are critical barriers, but that's just as true in the physical world, and the Web has already proved conclusively how quickly a new company can move into the mainstream. But the scale economies on the Web are very real. Developing advanced capabilities is expensive, and spreading the software costs over many interactions can provide significant efficiencies and operating leverage. Hardware scale economies on the Web are much less compelling, as the cost of equipment tends to go up in a linear fashion with volume. Thus, competition on the Web will likely be fierce, highly price sensitive and not particularly loyal, with only enough room for a few companies to reach the required scale economies — that is, the software business without customer lock-in.

If these factors have a familiar ring, it's because they pretty much describe today's IT hardware business. Think about it. □

Competition on the Web will likely be fierce and not particularly loyal

Moschella is an author, independent consultant and weekly columnist for Computerworld. His Internet address is dmuschella@earthlink.net.

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Beyond ERP: Finding a Way Out of the Enterprise Applications Investment Maze



COMPUTERWORLD

Navigating the Enterprise Applications Investment Maze

Which investments do mid-size companies need to make? How can mid-size companies find the right enterprise application partner to meet their long-term business goals?

The combined accounting/finance, human resources, distribution and manufacturing software applications market, often referred to as enterprise resource planning (ERP), has nearly tripled since 1995, from \$4 billion worldwide to more than \$11 billion this year. By year-end 1999, the market will nearly double again, exceeding \$20 billion in software (non-service) sales.

Meanwhile, investments in related areas such as customer relationship management (CRM) are on the rise. Companies in other industries are also demanding the benefits of ERP that come with integrated enterprise application suites, which span the most important business functions of a company.

As demand for enterprise applications grows in industries beyond manufacturing, it also grows in mid-size companies that have been slow to adopt the new technology they need. These organizations, often referred to as the mid-market (defined here as firms in the annual revenue range of \$20 million to \$500 million—although in some areas of the world a \$500 million firm is considered very large), will compose an increasingly large part of the enterprise applications market.

This article is intended to

help these companies find the best enterprise application solution. By sorting through a seemingly amorphous market of technologies and vendors, this article will answer two key questions. Which investments do mid-size companies need to make to be competitive? How can these companies find the right enterprise application partner to meet their long-term business goals?

MID-SIZE CHALLENGES

Mid-size firms entering the world of enterprise applications face unique challenges in their software purchase decisions.

Compared to larger organizations, these companies usually have fewer budget and IT resources to purchase and operate an enterprise business solution. Although their functional requirements may be as demanding as larger organizations, mid-market companies are less tolerant of enterprise application solutions that are risky, that require significant customization or lengthy implementations, or that don't offer a near-term return on investment.

These companies must be confident that the proposed business application can meet significant functional requirements (such as solving the

 International Data Corp.

Y2K problem, increasing global competitiveness or improving customer service) with a lower total cost of ownership (TCO), while not disrupting business operations.

The good news is that a lot of attention is now being paid to the business-critical needs of mid-size companies. Large enterprise application vendors, traditionally focused on Fortune 1000 firms, are moving down-market. To succeed, they must find ways to take price and complexity out of their function-rich solutions. To reach new mid-market customers, many will need to build—and manage—indirect channels for the first time.

At the same time, vendors who have mostly serviced smaller companies are building functionality and scalability into their products so they can vie for business with progressively larger companies. Whether an enterprise application vendor is moving up-market, down-market or is already established in the mid-market, this increased competition and attention for mid-size companies is creating more options for the customer.

However, having more choices only increases the need for caution, as mid-size firms enter the enterprise applications selection maze.

TRENDS

The focus of enterprise applications has long been on automating the management of typical business transac-

tions: logging an order, replenishing inventory, picking product, shipping it out the door and billing the customer. As the competition faced by mid-size companies increases, so does the relative value of every customer. Companies of all sizes are putting their money where their customer is: in building and maintaining a lasting relationship through the entire customer lifecycle.

CRM applications—spanning sales force automation, and customer support and marketing—are increasingly important to the purchase decision for enterprise applications. IDC's Technology Integration Panel Study (TIPS) shows that 31% of companies that purchased CRM applications bought them in conjunction with accounting applications (see Fig. 1, p. 4). Other applications which are often purchased with customer support include sales automation, planning/forecasting and analysis, and marketing.

From this broader customer-oriented perspective, the extended enterprise application market (which includes manufacturing as a representative vertical) was \$15.7 billion in 1997. IDC expects this market to grow to \$42.5 billion by 2002, for a five-year compounded annual growth rate (CAGR) of 22%. (See Fig. 2, p.5.) Although CRM currently accounts for only 9% of this

Kodak Offshoot Turns to Platinum for Non-Customized Enterprise Solution

Eastman Software, a Kodak business, is a leading provider of enterprise work management technology. Enabling customers to automate the flow of their critical information and work processes is the foundation of Eastman's growing business.

When it decided to implement a new enterprise solution, Eastman Software had specific requirements: It wanted a cost-effective, proven, stable solution that met its needs right out of the box. Use of Microsoft NT and SQL Server was also critical.

After reviewing several products, Eastman chose Platinum Software's integrated financial and distribution solution. "As a worldwide software company with a wide range of products and related services, our order process requires capturing model numbers for software, maintenance, professional services and education," says John Szczymski, controller and director of finance at Eastman Software.

"Platinum Software's solution easily tracks hundreds of active model numbers and complex customer order requirements," he adds. "Platinum's Advanced Distribution module in particular supports this need, as well as downstream commission and royalty reporting requirements."

The above case study was provided by Platinum Software to Computerworld Enterprise Publications.

broader enterprise applications market, it is the fastest growing segment. IDC expects it to grow at a 46% CAGR compared to 18% in the traditional enterprise applications market.

Packaged Applications Purchased with External Customer Support Solution

Finance/Accounting
Manufacturing
Sales Automation
Planning/Forecasting/Analysis
Distribution
Inventory Control
Marketing
E-Commerce
Human Resources
Other

Number of respondents: 100
Source: IDC Technology Integration Panel Study (TIPS)

IDC TIPS is based on quarterly surveys of more than 100 IT professionals in North America, representing over 15 industries and three company size bands.

The thought of investing in technology to automate a supply chain can be daunting for a mid-size firm. Effective use of the Internet will make the vision more achievable.

FROM BPR TO SUPPLY CHAIN REENGINEERING

Other parts of the enterprise application maze are becoming critical to mid-size firms. Business process reengineering (BPR) initiatives continue to eradicate (or at least reduce) stovepipe operations, thereby streamlining interdepartmental processes. Companies are also unplugging standalone applications in favor of integrated suites that address internal BPR initiatives while supporting supply chain reengineering. According to IDC TIPS, at 1997's end, only 3% of U.S. companies were in the process of implementing supply chain automation. But 26% were planning to implement such a system in the next two years.

The thought of investing in

technology to automate a supply chain can be daunting for a mid-size company. Effective use of the Internet will make the vision more achievable. More of an equal opportunity technology than preceding proprietary technology—electronic data interchange, for example—the Internet is forcing convergence around underlying communications standards and intuitive user interfaces that are easy to maintain by even the smallest companies.

FROM AUTOMATION TO OPTIMIZATION

IDC TIPS also shows that increasing productivity was the top priority for all sizes of companies, and was especially high (43%) for firms with 100-999 employees (compared to an overall average of 36%). IDC believes that one of the next areas of business investment will be building closed-loop enterprise optimization systems (EOS). These systems, which more seamlessly integrate decision support and reporting tools with enterprise applications, will help increase the velocity of information flow—from operation to analysis to what-if analysis and back to operation. EOS is still an emerging concept but will be a key to competing in the new millennium.

INTEGRATED SUITES

The trends above have significant implications for application integration. Mid-size companies essentially have two choices: either to build and maintain the linkages on their own (or with a consultant) or let the vendor do it for them.

The tradeoffs between the standalone applications approach (often referred to, accurately or not, as best of breed) versus integrated application suites have largely been overcome by vendors who have expanded their product lines through development, acquisition and alliances to provide fully integrated suites of world-class products. With shorter application release cycles and increasing business dependence on information systems, having someone else worry about making your applications work together can dramatically improve TCO over the life of your enterprise applications system.

WHO TO BUY FROM?

Thousands of vendors around the world provide at least some part of the enterprise application solution; many can accommodate the application features you require. How does a mid-size company efficiently choose the right vendor for its needs? Assume the company has done a good job of identifying and prioritizing a base level of application requirements. Now, with hundreds of vendors to choose from, where does the company begin?

TECHNOLOGY PLATFORM

If platform or database choice is predetermined as part of a legacy investment or broader corporate strategy, that will trim the list of prospective vendors. If you are not bound to a specific technology platform, this criteria might be better used later in the evaluation after you find the de-

CRM Boosts Growth in the Enterprise Application Market
based on worldwide packaged software revenue



*Includes enterprise HR, manufacturing and research management

Source: International Data Corp., 1999

sired functionality offered by application companies with whom you'd like to do business.

There are many enterprise application technology platforms to consider. The following are the ones that IDC is often asked to comment on.

NT VS. UNIX

Microsoft continues to promote BackOffice suite and to expand its joint marketing efforts with enterprise application software vendors, even though the majority of Windows NT Server was sold separately, not as part of a BackOffice package. In 1997, Windows NT Server revenue increased 139%, compared to the lesser—but still very respectable—26% growth for Unix.

Unix continues to be the leading platform for distributed computing functions requiring a high level of reliability, scalability and manageability in a single server environment. However, NT is building momentum in small and mid-size companies, or divisions of larger companies, as an enterprise applications platform. This momentum is being assisted by

Having someone else worry about making your applications work together can dramatically improve TCO over the life of your enterprise applications system.

broader enterprise applications market, it is the fastest growing segment. IDC expects it to grow at a 46% CAGR compared to 18% in the traditional enterprise applications market.

FIG. 1: **Package Applications Purchased with External Customer Support Solution**

	GROUP TOTAL %
Finance/accounting	31.2
Marketing	21.6
Sales Automation	21.6
Planning/Forecasting/Analysis	20.6
Distribution	19.7
Inventory control	18.6
Manufacturing	16.1
E-Commerce	15.5
Human resources	10.2
Other	4.7

Number of respondents: 909

Source: IDC's Technology Integration Panel Study (TIPS), 1998

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*Includes accounting, HR, manufacturing and materials management

Source: International Data Corp., 1998

Having someone else worry about making your applications work together can dramatically improve TCO over the life of your enterprise applications system.

Capitalizing on an Integrated Enterprise Solution

Fechheimer Brothers Co., owned by Warren Butler's Berkshire Hathaway, is a leading manufacturer of professionally tailored uniforms. The company takes pride in providing the best possible customer service.

Effective use of technology plays a vital role in Fechheimer's consistency and accuracy in preparing orders for production and ensuring that garments are made to specification. Platinum Software's integrated enterprise solution, which offers financial, manufacturing and distribution applications, meets these challenges.

"Capital management and customer service go hand-in-hand at Fechheimer," says Dr. Patrick Byrne, president and CEO of the company. "Platinum Software's inventory control and production planning capabilities provide the information needed to analyze demand and make sure we have the right products in stock at the right time."

"The result is that we can manage our capital to achieve the highest possible return while we quickly deliver quality products to customers," he adds.

The above case study was provided by Platinum Software in Computerworld Enterprise Publications.

third-party enterprise application vendors that are aggressively porting products to NT.

ORACLE VS. SQL SERVER

Oracle is the clear database leader on the Unix platform. On the NT platform, however, its leadership is still being sorted out. While Oracle continues to lead in database revenue on NT, Microsoft has tremendous mindshare as the preferred database provider on NT (see Fig. 3 below).

Microsoft's release of SQL Server 7.0, with new features such as improved row-level locking and scalability, not to mention the backing of leading enterprise application vendors (except Oracle), should help SQL Server move up-market. But the prospects of overtaking an ever-improved Oracle database in higher-end markets are not so clear.

THE RIGHT APP PARTNER

Understanding what is the strategic focus of a vendor will in turn help you understand where to get the best packaged support for your requirements. A vendor that considers the mid-market strategic to their

business will likely:

- deliver more of what you need in the packaged solution, thereby minimizing your dependence on customization.
- price the product competitively, because they understand your needs and also because they are dependent on your business.
- hire people or work with partners that will help you derive value and manage risk to meet your goals, such as accelerate installation and facilitate training.

Understanding a vendor's market focus, plus how well the vendor has executed to date, will give you two good ways to shorten the list of vendors to investigate.

Assuming that a vendor's product meets your priority application requirements and that the vendor is financially sound, there are some other important considerations to be looked at in today's mid-size market. These include:

- What is the vendor's track record for navigating its business and its customers through the industry's technology shifts?
- What is the vendor's vision of the future? Is their roadmap the same as your roadmap?
- With whom is the vendor strategically aligned? What is each party's reputation as a partner? If the vendor sells you a package of solutions from different companies, who do you call if things go wrong? (You need the answer to this ques-

Oracle vs. Microsoft on NT: Two Perspectives



tion for not only the present, but the future as well). A vendor's list of partners is not always what it seems.

BUYER BEWARE

While vendors are attempting to build software and service offerings to meet any budget, you must understand the difference between reality today and vision tomorrow. Some of the offerings aimed at small to mid-size companies are new and still have kinks to be worked out.

When you build your short list of products and vendors, do the math. Make sure you understand the TCO over the expected life of the product:

- Software license, maintenance (What does this include?)
- Technology platforms (operating environment, database, network)
- Implementation services (Who bears responsibility if it doesn't work?)
- Training (How easy is it to learn or teach? New releases and staff turnover ensure that this is not a one-time expense.)
- Upgrades to new releases (What is the outlook for release cycles and functionality? How current does the company require me to be?)
- Customization (How easy is it to do yourself or to find experienced help?)
- IT staff (How easy is the set-up to run?)
- Licensing (Is the model competitive for my size of company and anticipated usage levels?)

CONCLUSION

Although investments in new enterprise applications have only been a minor portion of budgets earmarked for Year 2000 fixes, this added pressure on IT budgets has been taking budget dollars away from other investments in new applications for companies. Once the year 2000 passes, IDC expects to see a significant rise in investments in areas as CRM, supply chain automation and electronic commerce across companies of all sizes.

Stepping up to more competitive technology investments is not easy for any firm, let alone small to mid-size companies with fewer IT resources and less ability to weather unforeseen implementation problems or expenses.

But not investing is increasingly risky as well. Large companies, taking advantage of the Internet and other creative channels, are extending their reach to market segments such as consumers, vertical market niches and smaller country markets around the world, that were once the domain of small and mid-size companies.

To survive in this changing world, mid-size companies must find a way to affordably leverage the industry's best technology solutions. Though the enterprise applications maze may be difficult to navigate, continued success and growth in the 21st century requires mid-size companies to take this journey and find the right solution for their business application needs. +

The illustration on the front cover was created by W. Fair Images Inc.

Capitalizing on an Integrated Enterprise Solution

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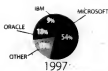
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COMPUTERWORLD

Custom Publications

This article was written by Clare Gillan, who is Vice President, Applications and Information Access, for International Data Corp. A leading consultant on software industry trends, she has managed IDC's research on worldwide applications and information-access markets since 1986.

Ms. Gillan directs IDC's software research spanning business and consumer applications as well as data warehousing and business performance management. She is recognized in the global IT community for her work in the area of decision support and enterprise applications including accounting, human resources, distribution and manufacturing. She researches and reports on the changing structure of global applications and information access tools markets in light of data warehousing, supply chain automation and electronic commerce as well as other technology and business developments.

This White Paper was created by Computerworld Enterprise Publications. Comments on the White Paper can be forwarded to managing editor Peter Buchner at (508) 820-8289 or peter_buchner@cw.com.

For more information on this (or other) White Papers or to purchase reprints, contact Heidi Broadley at (508) 820-8536 or at hendi_broadley@cw.com.

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EU ministers vote to protect consumers online

► Providers may have to respect up to 15 laws

By Elizabeth de Bory
BRUSSELS

EUROPEAN UNION consumer ministers ignored European Commission warnings last week and unanimously backed a resolution calling for reinforced consumer protection rights in electronic commerce.

The resolution calls on the commission to take every step

possible to ensure the right of users to rely on consumer protection laws in their country of residence when problems arise with electronic services.

The commission, however, has warned that this risks impeding its efforts to create a single market for electronic market services because it means that service providers may have to respect up to 15 different pieces

of national consumer protection legislation in the European Union alone, according to confidential documents obtained by the IDG News Service.

The resolution also runs counter to legislation being prepared by the European Commission that sets out a framework of rules for electronic commerce. The framework stipulates that the country where the service originates determines the applicable law. That

way, service providers have to comply with only one set of consumer protection rules.

As a result, the commission has issued a declaration to the minutes of the Council of Ministers' decision indicating that "its hands are free as to how it implements the resolution." A European Union diplomat explained following the council decision.

Resolutions aren't legally binding on either the member

states or the commission, but they do establish political commitments, the diplomat explained.

For this reason, it will be interesting to see whether the Council of Ministers takes this resolution into consideration when it reviews the upcoming electronic commerce framework directive, the diplomat said. □

De Bory writes for the IDG News Service in Brussels.

Accountants

CONTINUED FROM PAGE 37

PLLP, the company with which it merged, relied on shared 1041 bitsets, Ethernet LANs.

With plans to move 100 Eide Helmerke staffers into Charles Bailly's Fargo office, Stone and his crew knew that the shared Ethernet LANs would quickly become overwhelmed — especially during tax season, Stone said.

The merged company is the nation's 22nd biggest accounting firm, with nine offices in six Western states and \$52 million in revenue.

PLANNING PAYS OFF

Fortunately, premerger planning sessions began a year before the deal was completed. Stone and his counterparts at Charles Bailly were planning network upgrades even before partners for the two firms approved the merger in October last year.

The merger wasn't without problems.

Because both companies were running Novell Inc.'s NetWare 3.x network operating system before the merger, they decided both would upgrade to Version 4.11 and have a local consultant design the directory trees to make management and administration of NetWare 4.x users centralized, rather than doing it server by server.

As it turned out, the consultants "didn't give us the optimal technical advice" to merge the trees, said Stone, who declined to be more specific about the design problem or how it was solved.

Still, after the close of the tax season in late April this year, Eide Helmerke began moving people, servers and firewalls to the Charles Bailly offices.

"We got a good head start,

did a lot of planning up front, and the execution went well," Stone said.

Placing a \$120,000 bet on a network overhaul before closing a merger can be risky, said Edward M. Roche, a consultant at The Concorus Group, a Kingwood, Texas-based management consulting firm.

PROPRIETARY INFORMATION

One danger is that one of the merger partners can lose proprietary information to a competitor. Roche pointed to a failed merger between a large divisi-



fied conglomerate and a rival shoe manufacturer, both of whom he declined to identify. Before the deal was called off, the conglomerate shared super-

ior information technology project management processes that the shoe company ended up adopting.

But for Eide Bailly, the risk of information technology project management processes that the shoe company ended up adopting.

MICROSOFT PRECEDENT

IT departments are particularly sensitive about the contractor issue, partly because of the successful 1991 lawsuit brought against Microsoft Corp. by a group of former contract workers, according to Jim Howard, human resources manager at NationsBank Corp. in Atlanta.

In that case, the court ruled that several hundred temporary employees who worked at Microsoft between 1987 and 1990 could participate in the company 401(k) pension plan and take advantage of discount stock purchases available to regular employees.

But Howard said using consultants in IT is a necessity, given the current labor drought. "Most of our contracts are for

"We got a good head start, did a lot of planning up front, and the execution went well."

—David Stone
CIO, Eide Bailly

short-term assignments," he said. He explained that the assignments last usually between 30 and 90 days. Still, not every project can be kept to 90 days. Those that go longer are periodically reviewed on a case-by-case basis, Howard said.

Keeping long-term contractors around raises additional red

flags, according to Linda Pisterenger, CEO of Peoples Inc., a Somerset, N.J., consultancy specializing in human resources issues that affect IT. Habitual use of long-term contractors is a sign that "you're not planning your IT strategy effectively," she said. "It shows a lack of people planning." □

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Temps

CONTINUED FROM PAGE 37

using workers who don't qualify for benefits. According to the Labor Department, there are about 8.5 million independent contractors in the U.S. — about 6.7% of the workforce.

But determining who's a contractor and who's an employee is difficult.

Government agencies such as the Equal Employment Opportunity Commission, the Department of Labor and the National Labor Relations Board all have their own tests.

In addition, just because a company has an independent contractor agreement doesn't necessarily mean the courts will view the worker that way, said Mark Kinney, an attorney at the Minneapolis law firm of Lindquist & Vennum, PLLP.

CONTROL IS KEY

The primary consideration for determining whether someone is an employee or an independent contractor "is the level of control that the employer has over the worker," Kinney said.

For instance, a worker who is given tools and training by an

employer who also specifies where the work must be done is more likely to be an employee than a contractor, Kinney said. A worker who supplies his own tools and needs no training is more likely a contractor.

"The true test is that the contractor should have expertise that you don't have in-house," said Richard Ball, employment manager at Liberty Mutual Systems in Portsmouth, N.H., the IT arm of Boston-based Liberty Mutual Insurance Co.

CONTINUED FROM PAGE 37

IT, [GE is] a longer-cycle product company [that is, medical devices, locomotives]. At Merrill Lynch, you come into a market before there's any market to market opportunities.

CW: Given Merrill Lynch's global reach, what impact are the economic downturns in Asia and Latin America having on the company's IT project plans?

McKINLEY: You have to view some of these as very good buying times or market entrance times. For example, there's a fair amount of [negative] economic activity in Japan, but it's a watershed moment where multinational players like Merrill Lynch can make a big im-

port on a market. Having a strong balance sheet provides some unique opportunities.

CW: Such as?

McKINLEY: There are a lot of compelling buying opportunities for vendors to feed the revenue engines. And in terms of the businesses that Merrill is in, there are significant opportunities in the merger and acquisition area.

CW: What are your near-term objectives at Merrill?

McKINLEY: I want to make sure we have world-class performance with our team efforts here and also to knock it out of the park with Y&K. As well as E-commerce, virtual-commerce, etc., I think we're also going to look to where we can use technology to fuel top-line growth, such as sales-force effectiveness. □

McKinley

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Internet Commerce

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Briefs

What are your plans to deploy a Web application server?



- Currently implemented
- Plan to implement this year
- Plan to implement next year or later
- No plans to implement

Source: IDC IT managers at companies with annual revenue of at least \$1M

Source: Data Research Inc., Redwood City, Calif.

Pay-Per-Click

Many music critics in correspondence with pay-per-click music on the Internet.

The company has launched a beta version of the jobber (www.payperclick.com/jobber). Using RealtimeWorld Inc.'s RealPlayer software, Web surfers can sample a play list of favorite songs, assemble for 24 hours, or to sample for \$0.99 or go straight for \$29. The company-based Sony Music Online is a division of Sony Music Entertainment Inc.

Instant Mail proxy

The author's client-server mail building company has announced that it will test e-mail to be customers and pay bills over the Internet.

West Union Corp. is launching, N.C., will try to replace their traditional mail system with instant mail. The company is currently testing a mail proxy system that will allow users to send and receive mail over the Internet. The company is currently testing a mail proxy system that will allow users to send and receive mail over the Internet.

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Web hosts add services

► Amenities include high bandwidth, power backup

By Matt Hamblen

WASHINGTONPOST, NEWSWEEK Interactive wanted some tough, if unusual, reliability guarantees when the popular Web site hired a new Web hosting provider in August.

First it got a written guarantee of better than 99% network connection time. The site also got Web access provider Frontier GlobalCenter to agree to park a tanker truck of fuel outside its Herndon, Va. facility to run generators in case the power fails on Jan. 1, 2000, because of the millennium software bug.

WashingtonPost.Newsweek, based in Rosslyn, Va., and operated by The Washington Post Co., is one of many Web content creators flocking to complex Web hosting service providers. That industry will ex-

ceed \$500 million this year and will reach \$8 billion by late 2002, said analyst David Cooperstein at Forrester Research Inc. in Cambridge, Mass.

Complex Web hosting means a Web service provider gives the customer, such as WashingtonPost.Newsweek, not only Web access, but also other services such as physical hosting of the

"I could not afford what [Frontier] put into their network." — Steven Heibeln, WashingtonPost.Newsweek

site's servers or network capacity planning.

"It's a market driven by people doing more complex things on the Internet," Cooperstein said. All types of large voice and data carriers have entered the complex hosting field in the past year.

WashingtonPost.Newsweek will pay \$1 million per year for co-location services from Rochester, N.Y.-based Frontier — giving The Washington Post room

to place its 28 Web servers on Frontier's property in a screened-in, secured area — as well as a 100M bit/sec. Internet connection, said Steven Heibeln, vice president of technology at the site. That connection will soon be doubled to 200M bit/sec.

The Post had used the slower connection with Web hosts, page 41

Company maps out its brand identity on Web

► Mapmaker finds new business model on Web

By Sharon Macklin

THREE YEARS AGO, GeoSystems Global Corp. sold electronic mapping information to business customers such as rental car companies and publishers.

Then it posted a Web site to demonstrate its services.

Within a few weeks, that site hit traffic projections executives

hadn't expected to reach for six months. "We very quickly realized that we've got something here," said James Kilick, vice president of product management. The Mountville, Pa., company now expects half of its overall business to come from Internet-related sales next year — all thanks to the popularity of the site's free maps and door-to-door driving instructions, and some resulting spin-off businesses.

Designed in February 1996 as a small marketing site to demonstrate GeoSystems' capabilities to potential corporate customers, Mapquest (www.mapquest.com) now attracts an estimated 4.5 million unique visitors per month.

The site is so popular that GeoSystems plans to change its corporate name to Mapquest. "It's so hard to build a brand," said CEO Michael Mulligan, "and we've got one."

COMPANY LINKS

Some Web revenue comes from advertisements on the site, including an option for companies such as Blockbuster Entertainment Group and Borders Group Inc. to buy links so users can click to find store locations on any Mapquest map.

The company also developed a business selling mapping services, software and data to hundreds of other Web sites such as Yahoo, Travelocity, Excite and Lycos, so they can offer custom-drawn maps on demand.

"It's extremely popular," said Niki Pandey, producer for Yahoo Inc.'s Yellow Pages and mapping area. Yahoo is pleased with GeoSystems, she said, because the maps generate quickly, the product can accommodate heavy traffic, and GeoSystems helped Yahoo bring mapping capabilities in-house. With Yellow Pages maps, users can find a business listing

Brand Identity, page 44

REVIEW ► Communicator 4.5

Netscape improves browser E-mail, but adds complexity

By David Strom

PRODUCT REVIEW

► Communicator 4.5



NETSCAPE COMMUNICATOR 4.5 CORP. Mountain View, Calif.

(650) 354-1900

<http://home.netscape.com/download>

Price: Free

Pro: Improved E-mail features, including the ability to have more panes open to display folders, lists and messages and utilities to import address books

Con: Smart browsing isn't always intuitive

VERSION 4.5 OF Netscape Communications Corp.'s Communicator package isn't just a browser anymore. It now represents a way of life for Internet users. But adopting that lifestyle isn't easy because Communicator tries to be many things to many people.

With this version, Netscape has added lots of new browsing features, beefed up its E-mail client software and made everything more useful to users who roam around an enterprise network. That's the good news.

The bad news is that all this increases the complexity and size of the package: Version 4.5 is now more than 11M bytes to download, not including Mega-

Communicator 4.5, page 44



GeoSystems' Michael Mulligan says the Web site will start turning a profit next quarter

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Pay-per-listen

Sony Music Online is experimenting with pay-per-listen music on the Internet.

The company has launched a beta version of the jukebox (www.sonymusic.com/jukebox/). Using RealNetworks Inc.'s RealPlayer software, Web surfers can compile a play list of favorite songs accessible for 24 hours, at 10 songs for \$5.50 or 50 songs for \$10. Los Angeles-based Sony Music Online is a division of Sony Music Entertainment Inc.

Internet bill paying

The nation's sixth-largest bank holding company has announced that it will test a method to let customers receive and pay bills over the Internet.

First Union Corp. in Charlotte, N.C., will try a system from TransPoint in Englewood, Colo., a joint venture of Microsoft Corp. and First Data Corp. that was formerly named MSFOC. The pilot is expected to be launched in the first quarter of next year, initially to First Union employees. About two dozen billers have signed up with TransPoint.

Web hosts add services

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By Matt Hamilton

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Brand identity, page 44



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REVIEW • Communicator 4.5

Netscape improves browser E-mail, but adds complexity

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Communicator 4.5, page 44

Communicator 4.5 more complex

CONTINUED FROM PAGE 43

bytes more of options such as enhancements for Web designers, various multimedia players and other add-ons.

Despite the many attractions of Microsoft Corp.'s Internet Explorer and the less-and-mean Opera Software A/S Opera browser, I find myself coming back to use Netscape-Navigator as my browser of choice. Maybe I do it because I'm used to its quirks or like the way its menus and controls are laid out. In any event, I still believe Netscape maintains its lead with this version of Communicator.

Communicator includes several pieces of software in one package: the Navigator browser, the Messenger E-mail software and various multimedia add-ons, including RealNetworks Inc.'s RealPlayer, Macromedia Inc.'s Flash animation player and Headspace Inc.'s Beatin music player. Included with the software is support for Java Development Kit 1.1.5, which is behind the current version (1.1.7) shipping from Sun Microsystems Inc.

Perhaps the most noteworthy enhancements in Communicator are related to Messenger. New to the package are usability enhancements to the screen layout: You can have two or three panes displaying your list of folders, a list of messages and

the message contents. Or you can display just two panes.

Included with the software are utilities to import your address books and existing message stores from a wide variety of programs, including Qualcomm Inc.'s Eudora and Microsoft's Outlook and Outlook Express. My tests showed that these utilities work quickly and easily, even when they had to convert hundreds of entries.

Messenger will automatically manage your address entries as you type them into the "To:" field of your E-mail message. It also supports tem-

plates. Both features have been in competing products for some time.

A new feature is the ability to store your login profile on most Web servers or on Netscape's Directory Server. That saves reconfiguring Communicator every time you travel across the enterprise. If your travels take you into the public Internet, you likely will want to use the Directory Server to store your profiles because of its better security options. In either case, getting this feature to work isn't straightforward or well-documented, something Netscape of-

ficials said they will have fixed by the time you read this.

Messenger still is behind Eudora in terms of filtering capabilities: Eudora has far more scripting and flexibility and can act on both incoming and outgoing messages. Messenger's filters work only on incoming ones.

Of the other new features, most noticeable is one licensed from Alexa Internet called "What's related." This passes your uniform resource locator through a script maintained at Netscape's servers and displays a list of other sites that might offer similar subject matter. I ran into more blind alleys than really useful locations here.

New to Communicator is a feature called Smart Update, which is similar in intent to what Microsoft is doing for Windows 98 in its entirety. You can click on this item in your Programs menu and be transported to Netscape's Web site, where you can upgrade your software with the latest bits and pieces.

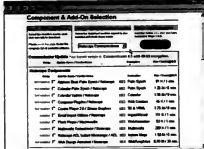
This is both an opportunity and an issue for corporate users: If you are in the information technology department, you have just lost control over what is installed on your desktops, as your users are free to do whatever damage they can with this system. However, it's a handy way to get software.

Though Version 4.5 seems more polished than anything I have seen from Netscape previ-

ously, I still had some problems. When I opened six browser windows, printing or selecting text from any one window took forever. The sluggishness went away when I closed all but one window.

Overall, I give this version of Communicator high marks, despite its few flaws. If corporations are looking to deploy Internet E-mail, they should seriously consider Communicator alongside Eudora and Microsoft's Outlook Express. The browser enhancements aren't all that noteworthy, although the "What's related" feature could improve with time and more experience. □

Strom is co-author of Internet Messaging and a frequent contributor to Computerworld.



Netscape's Smart Update option allows users to easily add new components to browsers. That could turn out to be trouble for IT administrators.

Web hosts add services

CONTINUED FROM PAGE 43

MCI Communications Inc. (now MCI WorldCom Inc.) as its Web provider for the past two years, but decided to renegotiate its outsourcing contract earlier this year.

It considered 18 vendors before narrowing the field to three. Frontier beat out the other two finalists, one of which was MCI, by offering the lowest price and more flexible terms and conditions. Heibin declined to be specific, but he said the contract gave him more flexibility to do such things as easily change domain names.

QUICKER RESPONSE

The bandwidth Frontier provider gives end users faster response when accessing the Post site, a feature that proved itself when the newspaper posted its independent counsel Kenneth Starr's report, Post officials said.

Bandwidth demand to the Post site burst to 65M bit/sec. during the peak on that day, many times the site's daily average of 15 to 20M bit/sec.

Frontier has provided more bandwidth than the Post would

be able to provide on its own, letting www.washingtonpost.com reach "several million" page views per day, Heibin said.

"I could not afford what they've put into their network," he added. Heibin compared Frontier's 100M bit/sec. pipe with the multiple T1s the publishing company would have used if not outsourced its Web access.

Heibin advised other Web site operators to insist on service-level guarantees in contracts.

Washington Post, Newsweek has "ample" opportunity to find a new provider if a competitor offers dramatically lower costs or problems develop, he said.

"If prices go down, we have the ability to get out. The flexibility is there," he said. □

Brand identity

CONTINUED FROM PAGE 43

and then click for a street map to see where it's located.

Mapquest also sells paper maps from a Web-based map store, for travelers who want something more detailed that they can receive by postal mail and take with them on the road.

Following what the company said were substantial investments in a technology infrastructure that serves up 4.5 million custom-generated maps

daily, Mulligan said the Web side of the business will break even this quarter and then start turning a profit. The privately held company doesn't disclose profits or sales figures, but it says it has about 225 employees.

GeoSystems uses approximately 50 servers from Sun Microsystems Inc., with different machines optimized for specific tasks, depending on whether they are more CPU- or memory-intensive, said Marc Haveland, director of Internet engineering at GeoSystems in Denver.

Proprietary back-end load-balancing hardware lets information technology quickly add capacity by hooking up an extra machine and rerouting traffic from a too-busy server. Mapquest uses BigIP from F5 Labs Inc. in Seattle for front-end load management.

Mapquest can generate cross-country driving directions, searching through 30 million U.S. street segments, in one to two seconds, although it takes longer for that data to be downloaded to a user across the Internet. □

Snapshots

MATURE SURFERS

People 50+ years of age with a computer at home 40%

Computer owners 50+ with Internet access 70%

Top Internet activities for people 50+

Exchanging E-mail with family, friends 72%

Researching a particular issue or subject 59%

Accessing news or current events 53%

Researching vacation or travel destination 47%

Getting local or regional weather information 43%

Top Web sites visited regularly by people 50+

Search engines 55%

News or current events sites 52%

Hobby-specific sites 49%

Health-related sites 35%

Investment sites 30%

Basic: Telephone survey of 603 individuals aged 50 or older; margin of error +/- 4%

Sources: Stephen J. Schmitt & Co., Inc., San Francisco; Comscore, San Francisco; and Research Strategies Inc., New York

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NEW PRODUCTS

INTERWOVEN INC. has announced TeamSite for Windows NT, software that coordinates development of large-scale Web sites.

According to the Sunnyvale, Calif., company, the software manages the collaborative work of concurrent developers, including work on Active Server Pages. It works with Microsoft Corp.'s Internet

Information Server and supports the Windows NT file system and domain security. Support for Extensible Markup Language, Dynamic HTML, the Web programming language, and site rollback are also included.

The software costs \$40,000 for the server and between \$500 and \$4,000 for each seat.

Interwoven
(408) 774-9000
www.interwoven.com

CACHEFLOW INC. has announced CacheFlow 501 and Cacheflow 503, caching appliances that improve Web response times for users.

According to the Sunnyvale, Calif.,

company, the rack-mountable devices include an operating system that retails the most frequently requested Web pages in local cache for faster serving. The devices can house up to 18G bytes of disk storage and up to 384M bytes of memory.

The 501 supports two T1 lines, and the 503 supports four T1 lines.

The 501 costs \$16,995, and the 503 costs \$18,500.

CacheFlow
(408) 220-2300
www.cacheflow.com

GAMACLES SOFTWARE has announced an enhanced version of Content Protect, an Internet copyright protection suite.

According to the Urbana, Ill., company, the software's Image Protect module protects graphics, a Page Protect module protects document sources, and a Frame Protect module helps prevent brand name theft.

The suite can prohibit the downloading or printing of protected content, disable right-click menus and encrypt document source code.

Pricing starts at \$50 for unlimited pages and up to 100 images on a commercial site.

Gamacles Software
(817) 358-7271
www.gamacles.com

MOBI TECHNOLOGIES INC. has announced LiveExchange 2.1, Web-based auction software.

According to the San Francisco company, the software was designed to help companies dispose of inventory surplus.

The new version adds support for the Dutch auction format, in which the bidding price descends to accommodate goods whose pricing isn't well-established or whose pricing depreciates rapidly.

LiveExchange 2.1 is available as a Java server with Java and HTML clients. HTML is the Web programming language.

Pricing begins at \$100,000.

Mobi Technologies
(415) 490-5550
www.mobi.com

MERCANTILE INC. has announced SoftCart 4.0, electronic-commerce software for building and maintaining an online storefront.

According to the Lisle, Ill., company, the software has enhanced security and order-processing features as well as a new store-construction wizard with multiple templates.

Once a store goes online, shoppers can proceed through a virtual "check-out" where the software calculates shipping and sales tax information, creates an invoice and processes secure payment.

Licenses cost \$100 per month.

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(630) 305-3300
www.mercantile.com

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Yet attempts of performance data available within R/3 can be overwhelming. Much is only retained on a daily or hourly basis.

It is often not granular enough for real time or after the fact problem determination and the impact of changes is difficult to assess. Identifying which system components affect response time can be a mystery. But finally, there's a way to save valuable time and eliminate guesswork.

It is OptiTrak, a component of OptiSystems' Energizer PME (Performance Management Environment) for R/3. OptiTrak detects, alerts and diagnoses problems in real time. It sends immediate alerts highlighting problem areas and provides the information needed to correct them as they happen.

Alert information indicating problems in SAP, the operating system and the database is immediately available along with the "worst case" transactions associated with these alerts. OptiTrak also provides full root cause analysis to prevent

future problems. And OptiTrak delivers comprehensive reports and graphs that enable users to correlate R/3, database, and operating system components with R/3 response time and problems, allowing the effects of changes to be easily identified.

Alert information is based on interval processing and appears on a single OptiTrak summary screen per interval. Access to data about other R/3 systems is also available, allowing a single point control for multiple R/3 systems.

Like all Energizer PME for R/3 components, OptiTrak resides within R/3 and uses standard ABAP programming features and R/3 data collection routines. This makes it simple to install, easy and familiar to use and its overhead is less than 1%.

OptiTrak works on all platforms that support R/3 and is designed for the full range of R/3 users, from the smallest company to the largest, worldwide enterprise. Find out today how OptiTrak and Energizer PME for R/3 from OptiSystems can energize your SAP R/3 investment.

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The Enterprise Network

LANs • WANs • Network Management

Briefs

Senders over ISM

Cisco Systems Inc. last week announced the Duo Series of routers, which enable small offices and telecommuters to tie their Ethernet LANs to corporate networks or the Internet using Integrated Services Digital Network Routers. The Duo series comes with several security features and support virtual private networks. They come in four models and are shipping now at prices starting at \$799.

Notes for PalmPilot

Clashdown Computing Inc. in Chicago has announced PylotPro V.2.0, software that serves as a conduit between Lotus Notes databases and iCal's PalmPilot device.

PylotPro maintains the look and feel of the Notes workspaces for users accessing the database information from a PalmPilot.

PylotPro users can synchronize with Notes from their desktop by dialing in to the server or from any TCP/IP connection, and PylotPro maintains the Notes security model. It costs \$145 per license, and volume discounts are available.

Safety in cyberspace

1990 losses by type of security breach

Unauthorized access	\$50.6M
Theft of proprietary information	\$33.5M
Telecommunications fraud	\$77.3M
Financial fraud	\$11.2M
Viruses	\$7.8M
Laptop theft	\$5.3M
Insider Net abuse	\$3.7M
Denial of service	\$2.8M
Sabotage	\$2.1M
System penetration	\$1.6M
Telecommunications eavesdropping	\$400,000
Wiretapping	\$200,000

Source: S&P U.S. security markets.

Source: Computer Security Institute, San Francisco

E-mail archives weakened by Net

• Data sent over free E-mail can be lost forever

By Robert Fusaro

GOVERNMENT regulations, lawsuits and the fear of losing important data are prompting many companies to centrally archive E-mail.

For example, Computer Forensics Inc. in Seattle, which helps lawyers recover and analyze electronic evidence, has reported a 75% increase in the number of consulting inquiries from corporations since the start of the Microsoft Corp. antitrust case.

But rogue users with mail accounts outside the corporate messaging system — free mail from Web sites or instant messaging accounts, for instance —

may throw a wrench into a company's efforts to archive E-mail, observers and users said at the recent Solutions Summit held by the Electronic Messaging Association (EMA).

As much as 20% to 30% of company data exists solely in E-mail messages that are deleted or lost as projects are completed or as people leave the company, according to the EMA. That information, which is never printed or recorded, can literally vanish unless it is properly stored.

FOOD ENFORCEMENT

Walt Disney World has a policy against use of outside mail accounts, said Philip Turmanen, a

Some archiving regulations:

SEC-17 - SECURITIES AND EXCHANGE COMMISSION: Drafted in 1934 as a guide for archiving and documenting paper-based communications among stockbrokers and their customers. The regulation was modified earlier this year to include E-mail communications. Trading companies must now establish retention policies for their broker-dealer trading systems. Messages and documents must be stored up to six years, and original message integrity needs to be maintained. It gives the SEC access to archived data so it can enforce trading guidelines.

FLORIDA SUNSHINE LAW (AND VARIATIONS IN SEVERAL OTHER STATES): Ensures that the public is aware of all dialogue going on in the state legislature. All information must be made available on a public scale. Even casual information exchanges — lunch appointments and the like — among employees must be archived for at least three years. Law applies to all state and local government employees in Florida and includes access to audio recordings and other forms of electronic communications.

senior analyst at Disney in Celebration, Fla., "but if [people] are using Hotmail or going into chat programs or Web sites they shouldn't, we wouldn't know." The company has proxy server logs, but usually uses them to back up suspicions about an employee, not as a way to identify problems, he said.

Mail archives, page 52

Cheap tools offer decent management

By Cynthia Boumeilis

SMALL AND MIDSIZE businesses that are sick of pouring time and money into complex and costly network management systems that take too long to deploy are looking to less expensive packages for network server and desktop operations.

Users said these newer packages are easier to install, don't require additional information technology resources and offer a quicker return on investment.

Cheap net tools, page 52

Managing bandwidth saves money

► Stopping trouble often cheaper than upgrade

By Bob Wallace

BANDWIDTH MANAGEMENT may not be common, but it can pay off for some organizations.

For example, a \$14,000 bandwidth management system bought by Zurich Technology

Services paid for itself in about a month by quickly identifying a conflict between users browsing the Internet and users downloading material from it, according to David Lefavor, director of network engineering. Without the tool, his group

would have needed more time to track down the problem.

And careful bandwidth management helped Autodesk Inc. eliminate costly and separate frame-relay connections, according to Troy Taylor, senior network engineer.

Bandwidth managers are LAN-attached devices that sit behind a router to monitor and control the flow of data. They were designed to manage the flow of traffic over a network more consistent and predictable. They also can generate screen displays and/or reports that give managers a picture of how their networks are being used.

The market for bandwidth-management products is still emerging, as the start-ups that dominate the market rush to add features to their packages (see chart, page 50).

That was the case last week when Alos Communications Inc. in Los Gatos, Calif., announced caching and accounting capabilities for its two bandwidth management products.

Cisco, page 52

Cisco rolls out access router for virtual net

By Bob Wallace

LOOKING TO HELP users build more versatile networks, Cisco Systems Inc. has entered the virtual private network (VPN) hardware market.

Cisco also is rumored to be porting its directory to Sun Microsystems Inc.'s Solaris while continuing to wait for Microsoft Corp.'s Windows 2000 (previously called Windows NT 5.0).

The vendor rolled out the 1730, a VPN access router designed for branch offices as well as midsize businesses. It has two slots for wide-area network interfaces, a built-in firewall and encryption options.

VPNs are a collection of secure links over an IP-based network such as the Internet. They're less expensive than traditional private networks.

TOO MANY TOOLS

What is most frustrating about your current network management systems?

Multiple tools	54%
Tool performance	54%
Ease of use	32%
Administration of personnel	18%
Device documentation	18%
Cost	6%
Nothing	4%
Other	2%

Base: Survey of 50 Fortune 1000 companies; multiple responses allowed.

Source: Proforma Research Inc., Cambridge, Mass.

Bandwidth, page 50

Bandwidth

CONTINUED FROM PAGE 42

Zurich Technology Services installed a system from Cupertino, Calif.-based Packeteer Inc. several months after its parent company, Zurich Insurance Group, gave its 3,500 employees access to the Internet.

"We didn't know how they were using the Internet but expected they were browsing," Lefavor said. "What we discovered was a strong amount of FTP traffic that was having a significant impact on those who were browsing."

Users downloading data and applications using the file transfer protocol (FTP) were gobbling up 80% to 90% of the bandwidth from a T1 Internet connection and squeezing out those who

were browsing. Lefavor used his systems to limit Internet downloads to about 30% of available capacity to try to satisfy both activities.

It also helped limit bandwidth-heavy video and audio traffic. Lefavor detected RealNetworks Inc.'s RealAudio and Microsoft Corp.'s NetShow real-time video and audio traffic on the access pipe. "I've since drawn people's attention to our policy of not using them," he said. "And

the system tells me who is using them, sooo..." Although most have stopped, Lefavor said he will use filtering technology to cut access to anyone who continues to violate the policy.

The problem at Autodesk, a San Rafael, Calif.-based computer-aided design systems maker, was more straightforward, Taylor said. Rather than risk having its critical order-processing and bug-tracking applications squeezed out by e-mail or other traffic, it maintained a separate frame-relay network for them, he said.

Bandwidth managers

Definition: Devices that help users control the flow of traffic across the wide-area network to make it more consistent and predictable

Specifics: They are usually hardware-based and include software; they attach to LANs

Cost: \$6,000 to \$20,000

Vendors: Packeteer Inc., Allot Communications Inc., CheckPoint Software Technologies Ltd. and Ukiah Software Inc.

Available: Since mid-1997

"We had to find a way to guarantee bandwidth to the top business-critical applications, even though it was a very expensive undertaking," Taylor said. The move saved about \$60,000 per year in frame-relay costs.

"One of the biggest issues facing network managers today is network capacity management," said John Morency, a vice president at Renaissance Worldwide Inc., a Newton, Mass., consulting and research firm. "They can either throw bandwidth at the network, which can be very expensive and may not necessarily solve the problem, or implement a product that manages bandwidth and at \$6,000 to \$20,000 can be a low-cost answer for many users." □

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NEW PRODUCT

IPIVOT INC. has announced Intelligent Broker 4000, an entry-level load balancer for companies with Web servers at a single site.

The Poway, Calif., company said this broker can process more than 6,000 connections per second. It lets network managers set delivery priorities and then routes each incoming request accordingly. Whenever server response times exceed specified limits for requests, the system reallocates server resources and throttles lower-priority connections as needed.

The load balancer costs \$14,995.

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"Relational DBMS and COBOL"

may sound like an oxymoron but the Tatung Company, one of the largest in the Republic of China, is using both in a hospital client/server system that delivers better patient care more efficiently. ACUCOBOL™-GT applications seamlessly send SQL queries to a Sybase DBMS and instantly retrieve patient histories, as well as providing easy access to portions of the database to accountants, purchasing agents and other employees. The prognosis is very healthy.

Ben & Jerry's Homemade, Inc. found that the real scoop on cross-platform compatibility isn't Java, it's ACUCOBOL-GT. They moved 460 programs and 1,000 screen components from a Novell Network on PCs to a new computer over a weekend. ACUCOBOL-GT was the clear choice because it runs on over 600 platforms.

Coffee Olat anyone?



The "Next Big Thing" for Web publishing is COBOL. and in fact, our ACUCOBOL-GT plug-in. Clients just install it in their Netscape or Microsoft browser, then can run your ACUCOBOL-GT applications from a hyperlink or embedded in your page without a single line of new application code. It's an incredibly fast and efficient way to provide your employees, distributors and customers with access to order entry, inventory or other databases. Getting on the Web doesn't have to get hairy.

Which came first?

Ask CSD (UIQ) and

they'll tell you exactly when the chickens and the eggs (not to mention the kippers, frozen peas and other products in our food chain) got to or will arrive at your favorite supermarket or bistro. When it came time to update their distribution software, they switched to ACUCOBOL-GT because it provided open access to relational DBMSs from Oracle and Informix, and made it easy to create the more than 500 GUI screens their users required. And now everything is sunny-side up.



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Sprint takes vow of reliability

► 100% net guarantee extends to desktops

By Matt Hamblen

SPRINT Corp. has announced 100% end-to-end network guarantees for all data services in 30 U.S. cities, a sign to analysts and users that top-notch reliability has become mainstream.

The announcement means that Sprint is extending its network assurances to customers' desktops and other end-user points. Analysts said MCI WorldCom Inc. and AT&T Corp. already provide 100% network backbone guarantees in 60 U.S. cities but haven't formally done so for all services to the desktop.

The announcement "shows

CDWorld's Music
Pulse Music:

► Connects to Music Works database by ATM network

► First installations in retail stores in Los Angeles and New York by early next year

► 4,000 kiosks expected worldwide (2,000 in the U.S.)

that having a 100% [available network] guarantee is the standard and it's a really big deal if you have it and a really big deal if you don't," said Melvin Porey, an analyst at International Data Corp. in New York, a sister

company to Computerworld.

But Sprint officials and other analysts pointed out that no other carrier has a standard guarantee for Asynchronous Transfer Mode (ATM) network availability or has jumped to 100% end-to-end guarantees for ATM, frame-relay or Internet Protocol networks.

ONE PROMISE

"One hundred percent is a pretty bold promise to make, no matter what your network looks like," said Eric Zines, an analyst at TeleChoice Inc. in Dallas.

Officials at music distributor CDWorld Corp. in New York said the Sprint guarantee for ATM networks is important because CDWorld wouldn't be able to function without it.

That's because CDWorld has a plan to set up more than 4,000 kiosks in airports and retail outlets that will be connected to servers via Sprint's ATM network.

Kiosk customers will be able to select music from their favorite artists that are "squeezed from a server over ATM and burned onto a CD by laser at the kiosk," said Anthony Smith, a CDWorld spokesman. The company, which also plans to use its kiosk network to distribute videos, chose Sprint's service for its sound quality and ability to monitor network usage, he said.

Sprint said it will offer three days of free service for any ATM network failures of up to one hour each month in each of the 30 cities.

But analysts said those credits don't mean much, because loss of a network can cripple a business. □

Mail archives

CONTINUED FROM PAGE A5

Lynne Priestly, an E-mail service manager at AT&T Corp. in Lincoln, N.J., said the proliferation of messaging has created some archiving challenges. The company has servers for archiving. "But many of us, just because we do retain a lot of messages, have moved to Jet drives or Zip drives for doing our messaging archiving," she said. "I don't know if there are ported [corporate] limitations regarding archiving, but I suspect there are."

Archiving is a requirement at Charles Schwab & Co. because of the heavy tracking and reporting regulations in the financial services industry. But Linda A. Leo, director of the internal audit department at Schwab in Phoenix, said the San Francisco-based company has "very specific policies" that discourage the use of outside messaging systems by end users. "We handle two types of mail: the internal customer mail that comes in on a dedicated customer system, and the corporate messaging system" that runs Microsoft Corp.'s Exchange, she said.

Schwab has an archiving system in place but is considering an upgrade, Leo said.

ELECTRONIC DOCUMENTS
Dennis Cannon, an EMA pundit and technical director of the collaboration and messaging group at Compaq Computer Corp., said the characteristics of paper documents, which are archived regularly, are almost the same as those for electronic documents.

But with electronic messages, the business might also have to archive distribution lists, returned receipts, attachments and encryption methods, he said.

Cannon suggested making journals of, and archiving, messages at the server. "It makes sense when you consider all the remote users and people who store information all over the place," he said.

Business managers need to determine what constitutes organizational property and communicate that clearly to end users, EMA officials said. Not doing so can be costly.

According to Computer Forensics, the process of reviewing and collecting E-mail from disparate types and databases rarely costs less than \$55,000—plus whatever legal damages are incurred. □

Cheap net tools

CONTINUED FROM PAGE A5

but there's a trade-off. They also don't offer all the functions of larger packages. Compatibility problems could also torpedo much of their appeal.

Products in this category include IT Director from Tivoli Systems Inc., a family of IT groupware packages from Computer Associates International Inc., and Frontline Manager from Silicon Valley start-up Manage.com. These packages range in price from \$8,000 to \$30,000 depending on the number of network nodes. That's a lot cheaper than large frameworks/suites such as CA's Unicenter and Hewlett-Packard Co.'s OpenView, whose prices start at around \$30,000 and may top \$1 million, depending on network size and additional

hardware or services.

Minnesota Rubber Co. in Minneapolis estimated it will save \$50,000 this year using Tivoli's IT Director. The private maker of auto brake diaphragms paid less than \$50,000 for its 300-node network. According to Don Ritchie, the company's lead technical analyst, that saved the company from spending \$50,000 for an additional employee and to travel to remote plants.

BIG SAVINGS

Privately held Crydom, which makes solid-state relays and is a subsidiary of Silicon Power Corp., a holding company in San Diego, saved 50% when it bought IT Director for 140 nodes rather than OpenView.

The \$56,000 price tag for the OpenView product Crydom had evaluated was too steep. "For what we paid, Tivoli had all the tools we need for software distribution, remote control of PCs and software inventory and alerts," said Fernando Victoria, IT manager at Crydom.

Although users said the cheaper packages can give a decent bang for the buck, most organizations will still need single-point tools to do further in-depth analysis. For example, MedIT, the IT group at Stanford Medical Center in Stanford, Calif., analyzes data packets using a single-point tool in conjunction with Manage.com's Frontline Manager.

Another issue is address translation. If more than one package from the same vendor is installed at various workgroups in an organization, they may not recognize one another, said Sandra Potter, senior IT

specialist at Air Products and Chemicals Inc., a \$5 billion manufacturer of specialty chemicals in Allentown, Pa. She said in that case, a company will need standard or custom interfaces to share information among the packages. Or it may be necessary to send data to an enterprise framework.

LOTS OF JUNK

One out-of-the-box capability is much sought after by IT managers — and easier to promise than to deliver. That's why many large packages end up on the shelf. MedIT leaked Cabletron Systems Inc.'s Spectrum network management package after a year of failed implementations. The same fate befell OpenView and Sun Microsystems Inc.'s NetManager. Robert Zeien, a network engineer at MedIT, said those products didn't pool the network in intervals as promised.

Web interfaces are also attractive to some users. MedIT bought Frontline Manager primarily because it's built on Internet technologies. Frontline Manager lets MedIT's individual IT groups make custom Web interfaces that let them manage devices isolated on their portion of the network.

"Frontline is perfect for small to medium-size companies that need to manage their IP resources," said Valerie O'Connell, an analyst at Aberdeen Group Inc. in Boston. She said Web-based packages such as Frontline Manager make it easy for generalists to manage from any location. □

Cisco

CONTINUED FROM PAGE A5

use dedicated data lines.

One analyst lauded the Cisco device for its ease of configuration and use. "You don't need a service provider to set up your VPN [equipment] because you can do it yourself," said Ray Boggis, an analyst at International Data Corp. in Framingham, Mass., a sister company to Computerworld. "It's not quite VPNs for Dummies, but it's getting there."

Pricing for the 720, which

ships this month, starts at \$2,195.

In other Cisco news, rumors swirled that the networking giant is planning to port its Active Directory implementation to Solaris. Cisco licensed Microsoft's Active Directory in May.

NO OFFICIAL SCHEDULE

"It's obviously on our radar screen, but as far as doing it before [NT] 5.0, we can't comment," a spokeswoman for Cisco said. The vendor said plans to port its Cisco Networking Services for Active Directory

to the next NT product, which has been delayed until at least the middle of next year.

Porting CNS/AD to Solaris wouldn't bother one Cisco/Microsoft-based shop. "Cisco owes it to the industry to work with all viable operating system vendors on this," said Chris Haggman, director of technology at Keesal, Young & Logan, a law firm in Long Beach, Calif. "We've made our investment in Microsoft and will go with them, [but] other users could benefit from having it on the Sun platform." □



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e-business means a lot of things. It means moving business to the Web. It means improving relationships with customers, suppliers and employees — boosting communication and efficiency both inside and outside an organization. It means looking at data in new and meaningful ways.

e-business also means looking at PC networks in new and significant ways. And it's probably not much of a surprise to hear that Windows NT[®] has become one of the most popular new operating systems in the corporate world.

What you may not know is that IBM is building Intel[®]-based servers with the power to run the major business applications — from companies like SAP[®], Baan[®], JD Edwards[®], Oracle[®] and CAD — used in the largest of corporate networks.

But it isn't power and reliability alone that distinguish Netfinity servers from their would-be peers. It's that they come loaded with things like IBM Netfinity Management tools — a comprehensive set of standards-based software tools that make it easier to manage and run your network. And that when you add advanced e-business tools like Web Server Accelerator (it's free on the Net), you can optimize

performance by up to 60% when a Netfinity 7000 M10 server is used to serve up the Web.¹ It's that we work with industry leaders like Intel to bring new, more powerful technology to market — in servers designed to use it to its fullest.

The Netfinity 7000 M10 server, for example, is powered by the new Intel Pentium[®] III Xeon[™] processor 400 MHz, providing it with some of the highest performance benchmarks in its class. (Visit www.pc.ibm.com/us/techlink/perf for details.)

History, plain and simple, also separates Netfinity servers from all others. IBM has been building mission-critical systems for the corporate world for decades, and now we've applied that expertise to the world of Windows NT. Netfinity servers are the first to offer scalable parallel technology with a clustered system and hot-plug PCI implementation. Netfinity servers also offer scalability features you don't expect in a server running Windows NT — like the ability to hot-swap hard disk drives, adapters, power supplies, and more — without taking your network down. Netfinity servers are also quick and easy to integrate into your existing IT infrastructure, whether it's powered by IBM (thank you or not).

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FACT

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The real explosion of Windows NT servers has been at the departmental level — starting with desktop computers and then connecting those desktops into larger networks, enterprise servers and legacy systems.

The growth of Intranets, Web commerce and sophisticated custom apps built with powerful cross-platform software like Lotus® Domino™ has fueled the demand for powerful, reliable servers that connect thousands of PC users inside an organization — from sales reps in the field armed with ThinkPads, to desktop users in customer service departments. Servers like the Netfinity 5500 Series.

server capable of processing millions of transactions a second). In such a world, the ability to quickly and seamlessly integrate departmental Windows NT servers into your larger IT infrastructure is critical.

Netfinity servers, like the new Netfinity 5500 M10, help simplify this integration. Take, for example, IBM Netfinity Manager software. It ships with every IBM Netfinity server. It's platform agnostic. It lets you manage clients and servers from dozens of leading manufacturers. It also helps you tie your Windows NT network into enterprise-wide management software such as Tivoli® Enterprise, Microsoft® SMS™ and Intel LANDesk.™

This is what e-business is all about — not just building powerful servers for departmental use (and make no mistake, the Netfinity 5500 M10 can handle everything from huge e-mail networks to 24/7 Web commerce), but also providing tools to integrate and manage those servers as part of a much larger network. This helps you control costs and keep your network up and running.

This is the difference between a plain-Jane server and an e-business tool.

FACT

All these people connected via Windows NT servers also need access to the detailed information that resides on the more powerful systems that are the core components of a major enterprise (like, say, an IBM RS/6000 SP UNIX®

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e-business tools



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Well, IBM is making servers for growing businesses with all their growth still to come. That means prices you can afford right now on a server that runs Windows NT, the basic Netfinity 3000 server (complete with an Intel Pentium II processor, speeding along at 300 MHz), for example, starts at just \$2,305.*

That's a very affordable server — but not a stripped one. Like all Netfinity servers, the Netfinity 3000 comes standard with Lotus® Domino™ or Lotus Domino Intranet Starter Pack™, not to mention Netfinity Manager software.

This makes it easy and inexpensive to put your business on the Web, glowing millions of customers around the world to reach you. So you can grow from a very small business (say, for example, one pet store) to a very large one (say, the world leader in designer dog chow sales). As your business grows, you'll appreciate the

virtues of the systems management software that makes it vastly easier to keep your network up, running and generating more business. Nothing wrong with that.

FACT

Of course, the value, quality and reliability of the Netfinity 3000 server is such that a whole bunch of not-so-small businesses will choose them by the dozens for things like print spooling and file management. Not the most glamorous tasks, but the day-in, day-out, got-to-be-dependable side of e-business.

If you'd like to know more about the full range of IBM Netfinity servers, financing arrangements and server options — from supplemental storage to fiberoptic connections — bookmark www.ibm.com/netfinity.

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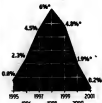
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Software

Databases • Development • Operating Systems

Briefs

Worldwide year 2000 spending as a percentage of total IT spending, 1995-2001



Total IT spending, 1996: \$1,467*
Total year 2000 spending, 1996: \$87,48*

*Projected

Source: International Data Corp., Pittsburgh, Pa.

Sun offers Java site

Sun Microsystems Inc. last week launched the Java Industry Connections — a Web site designed to help business keep track of Java technology developments, products, trends and news from more than 200 publications (java.sun.com/industry). Sun also announced four new components of its Developer Connection program: Sun Support Access, to help Java developers get assistance through a technical library and Sun support engineers; and Developer Essentials Professional and Enterprise editions, which give developers early access to Sun software and tools via CD-ROM four times per year.

Data automation

Carlson Corp. in Minneapolis, Minn., has announced PureView, a data integration package for customer-centric data warehousing and customer relationship management applications. Pricing wasn't available.

Media management

IBM has adopted Boston-based firm Corp.'s MediaBank into its Media Asset Management framework. It's a desktop application that enables single or interacting workgroups to share content and files.

InstallShield saves IT time and headaches

By David Orenstein

IF INVESTING 700 HOURS of labor just to speed up software installation sounds like too much effort, then consider that such an investment at Butler Manufacturing Co. is saving more than 11,200 hours among more than 700 workers.

The \$924 million steel beam and building materials company in Kansas City, Mo., created a system — based on InstallShield installation software from InstallShield Software

Corp. in Schaumburg, Ill. — to automate the installation of about 50 applications. It has saved a half-day per information technology worker for each quarterly software update, said programmer/analyst Brian Nebeker.

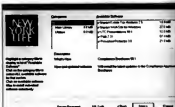
Because the server knows each end user's profile, it delivers only the software appropriate to that user.

In cases in which Microsoft Corp.'s Windows 95 and Office also must be installed, Butler saves even more time. "The guys would spend a day setting

up each machine for the user," Nebeker said. Now, by clicking on a link to a server, end users set off an automated installation process that takes only half an hour, Nebeker said.

The \$18,000 investment in InstallShield and other project costs should pay for themselves in nine months, Nebeker said.

Likewise, developers at New



New York Life is working on a custom program to deliver quarterly updates to 7,000 agents

York Life Insurance Co., an insurance and financial services company with \$8.4 billion in assets.

Custom applications, page 58

In-house training for ERP often preferred

Training recipe

Purina Mills is training its R/3 users in five stages:

- 1) Basic PC training, including computer games
- 2) General overview of how R/3 applications work
- 3) Initial job-specific R/3 training classes
- 4) Advanced classes with role-playing scenarios
- 5) On-the-job training after the software is rolled out

» Outsiders don't have job-specific answers

By Craig Steadman

FOR MANY COMPANIES installing ERP applications, budget and business know-how issues make user training a do-it-yourself project.

The high cost of vendor-run classes and the need to closely tie technical training to the internal business processes that workers have to follow to get their jobs done often prod busi-

ERP training, page 58



Project software gets high Nielsen rating

By David Orenstein

NEW YORK-BASED Nielsen Media Research Inc. uses statistical sampling to track what America is watching on TV. But until this year, its information technology department didn't apply the same rigor to estimating the costs and scope of its application development projects.

That meant teams occasi-

ally fell short. "Some [projects] were on time, and some were late," said LeeAnn Lambly, IT process quality manager at Nielsen's Dunedin, Fla., office.

Last year, Nielsen resolved to sharpen its focus on client/server development by using a tool called KnowledgePlan, from Software Productivity Research Inc. (SPR) in

Metuchen, page 58

Meta data comes to fore at conference

By Stewart Dick
ORLANDO, Fla.

AT THE Data Warehousing Institute leadership conference last week, meta-data management sessions overflowed with attendees and a number of meta-data

toolmakers showed off new wares. Meta-data tools dominated the conference's "pioneering products" prize category by capturing half the top spots.

"There's been a lot of excitement about meta data," said Wayne Eckerson, vice president of technology services at The Data Warehousing Institute, "because without comprehensive, synchronized meta data, your warehouse will die."

Meta data is the index of what's held in a data warehouse: an overview of what's

Meta data, page 60

In-house ERP training grows

CONTINUED FROM PAGE 27

ers of enterprise resource planning (ERP) software to design and conduct their own training programs for users.

For example, animal-feed maker Purina Mills Inc. last year tried using an outside training firm to prepare users for a 36-plant rollout of SAP AG's R/3 applications that started in January.

But that approach "was a disaster," said Steve Hunt, R/3 project manager at St. Louis-based Purina Mills.

The hired-gun trainers were able to demonstrate R/3's basic workings, "but they didn't know our business well enough to be able to relate to the users," Hunt said. "Whenever anybody had a question about business processes, [the trainers] couldn't answer it."

EARLY TRAINING OVER

By the first break in the initial training session last fall, it was clear that a different method was needed, he said.

Purina Mills then spent six

months designing and financing its own training program for R/3, which it is providing to 1,300 users in a staged process due for completion next September (see box, page 57).

A-dec Inc., a dental equipment maker in Newberg, Ore., that last year installed Baan

Co.'s finance and manufacturing applications for 450 users, decided to train the workers itself.

"Instead of paying the \$4,000-a-head fee for classes run by the Dutch vendor,

"Baan has done a pretty reasonable job of developing end-user training classes, but the problem is that they're extremely costly," A-dec CIO Keith Bearden said.

A-dec put together a three-step training regimen that teaches employees how an ERP

system works, how to navigate Baan's software and how to use it for their particular jobs.

ERP training is still a big business for vendors and consulting firms. International Data Corp. (IDC) in Framingham, Mass., a sister company in Computerworld, said U.S. ERP



training revenue totaled \$770 million last year and should reach \$1.1 billion this year.

But most of that is for training ERP project teams, not the people who actually will use the software, IDC analyst Ellen Judian said.

Procter & Gamble Co. in

Cincinnati is working with third-party trainers on its huge R/3 rollout, which stands at about 15,000 users now and is expected to reach up to 60,000 employees in the next four to five years.

But the outside trainers "are behind the scenes helping us figure out what the best formats are for courses. You don't see them in the classrooms," said Jack Leone, director of communications, organizational change and training for Procter & Gamble's global SAP project.

Instead, the classes are run by internal employees "who are familiar with our business processes," he said.

Paying for outsiders to get users up to speed on R/3 also would be unaffordable "when you're talking about tens of thousands of people," Leone said.

Not that do-it-yourself training necessarily comes cheap. For example, Leone said salaries and other training-related costs are still chipping up about 15% of the total budget for Procter & Gamble's R/3 project. That figure fits within the range of 10% to 20% of project costs cited by other ERP buyers. □

Nielsen

CONTINUED FROM PAGE 27

Burlington, Mass. The software company details about a project and data about the development staff to a database of more than 8,000 projects tracked by SPR consultants.

Based on the historical comparisons, the software estimates how much a project will cost, how many staff members with different skills will be needed and how long the project will take to complete.

USED FOR 30

Nielsen Media, whose development staff has tackled 25 client/server projects and more than 40 mainframe maintenance projects this year, has used KnowledgePlan for 10 of them, Lamby said. One project, a modest software upgrade, was finished two weeks earlier than anticipated. By contrast, the original software was released several months behind schedule last year.

The company's goal is to tailor KnowledgePlan to its needs

Installing custom applications

CONTINUED FROM PAGE 27

assets, are creating a custom program, based on InstallShield. It manages the complex installation tasks faced by about 7,000 sales agents when they receive quarterly software updates on CD-ROMs.

The insurer is using C++ to develop custom dialog boxes that present end users with a consistent interface, said Tim Courtney, director of systems at New York Life.

Once a user chooses which applications to install from the CD, the program takes over for them.

"These folks are businesspeople; they're not technology gurus," Courtney said. "They don't want to spend three, four or six hours loading software, and a lot of the end users don't want to know about it."

PREVENTS ERRORS

Automated installation is not only quicker, but it also shields confused end users from potentially misinstalling software and having to make costly and time-consuming calls for help. That reduces the burden on help-desk staff. "The less support calls that come in, the better," Courtney said.

InstallShield, which is nearly ubiquitous in shrink-wrapped PC software, is finding increasing use among developers in corporate environments where applications are becoming very complex and more difficult to install, said Steve Zoppi, an an-

alyst at Meta Group Inc. in Stamford, Conn. InstallShield estimates that 40% of its sales are to corporate clients, rather than software firms.

One reason the idea hasn't caught on more is that writing custom InstallShield scripts and

code to automate complex enterprise installations isn't easy, Zoppi said.

Version 5.5 of InstallShield Professional, released last month, includes features to ease the development of Web-based installations. The installation software is making the process somewhat less difficult, but it still isn't easy, Zoppi said. □

NEW PRODUCTS

SERVICESOFT CORP. has announced *Adaptor Library for Desktop Computing*, software designed to assist corporate help desks with PC problems. According to the Needham, Mass., company, the software contains more than 100,000 problem resolutions for common hardware and software problems.

It also includes interactive "tutorials" that allow end users to receive on-demand, desktop-based training for key software applications.

An annual subscription begins at \$9,000 per server, including quarterly updates. **Servicesoft**
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www.servicesoft.com

PUZZLE SOFTWARE INC. has announced *PopTime Cluster 4.1*, software that can manage cross-platform clusters from a single interface. According to the San Mateo, Calif., company, the software allows customers to group servers running Windows NT 4.0 and Sun Microsystems Inc.'s Solaris 2.5.1 or 2.6 together in the same cluster. The new central Management Console uses a single configuration image across the heterogeneous cluster for faster setup and maintenance of service levels. Pricing for an entry-level, two-node cluster starts at \$6,000 for Windows NT and \$7,000 for Solaris. **Puzzle Software**

(950) 575-0000
www.puzzle-software.com

MONITOR CORP. has announced *NovNet-Web 2.0*, client/server software that can perform online backups across LANs, dial-up connections and the Internet. According to the Miami Valley, Calif., company, the software helps companies protect data stored on laptop and desktop computers. Backup to a central NovNet-Web server can be automated, and end users can conveniently restore data from a single backup. Pricing starts at \$2,995 for a 25-user license. **Monitor**
(800) 599-0700
www.monitor.com

During this year's upgrade, KnowledgePlan armed developers with the specific information about time needed to incorporate new feature requests. That let the developers defer, until the next release, any requests that would have caused the software to miss its release date.

During another project, KnowledgePlan alerted Nielsen to add testers to an underfunded development team, Lamby said.

Version 3.0 of KnowledgePlan, released last week, will let users add a historical database of their own projects. "I can't tell you it will be easy to use," Lamby said. But the company's goal is to tailor KnowledgePlan to its needs and eventually use it most of its projects.

Most development shops lack scientific discipline in their project management, said Dick Heiman, an analyst at International Data Corp. in Framingham, Mass., a sister company to Computerworld. Adopting a statistical method for estimation is a good beginning, but "it's not a cure-all. It's only one step," he said. □

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Meta data becoming a key

CONTINUED FROM PAGE 57

inside, where it's held and its definitions.

The topic lately has come to the fore because companies have started reaching the stage of how to best manage the warehouses they've spent so much time and money building, and meta data is

one of the keys to management.

One well-attended, user-led session featured Craig Bell, assistant vice president and manager of data resource management at NationsBank Corp. in Charlotte, N.C. He said a meta-data repository

helped the bank handle a massive data overload, allowed it to start setting corporate data standards and finally analyze long neglected data.

Because of a string of acquisitions, the bank "had data coming from everywhere," Bell said. "At the end of the month, we'd do a big fire drill to get everything to reconcile and spend very little time actually analyzing the data."

So NationsBank installed a meta-data repository from Platinum Technology Inc. in Oakbrook Terrace, Ill., to eliminate the uneasy bridges it had been using to link disparate systems.

That allowed the bank to set standards for business rules and data definitions.

At The Prudential Insurance Company of America, different business units have their own data warehouses, each based on meta data held in a repository, also from Platinum.

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FEDERATION OF UNITS

Meta data is extremely important to the company, said Ho-Chuan Ho, Prudential's Roseland, N.J.-based manager of corporate information technology — especially since Prudential decided to run its data collection operation as a federation of business units, rather than trying to bring all of them under one data warehouse roof.

"The meta data repository is where we have common data definitions and codes, and widespread business units can use that to jump-start new projects," Ho said.

Among the products announced were the following:

• **Pine Cone Systems Inc.** in Englewood, Colo., announced its Meta Exchange software, which manages meta data across mixed systems.

Meta Exchange lets users connect products and exchange meta data without having to go through a repository. Available now, its pricing starts at \$50,000.

• **Arden Software Inc.** in Westboro, Mass., announced meta-data interfaces called MetaBrokers and the MetaConnect Cooperative, a meta-data integration partner program.

MetaBrokers, which will be available in the spring, was designed to let users see and understand meta-data lineage and the business rules that apply to warehouse data.

• **San Jose, Calif.-based Business Objects SA** announced BusinessObjects 5.0, the latest edition of its online analytical processing query tool.

It includes new customization features based on Microsoft Corp.'s Visual Basic for Applications and a self-contained viewer that can be embedded into applications.


It will be available in the spring, when pricing will be announced.

• **Burlington, Mass.-based Cognos Inc.** announced Impromptu Web Reports, a managed reporting tool that lets users schedule and distribute reports using the Internet.

Pricing starts at \$30,000 for 100 users. □

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PC PEAK?

U.S. PC revenue projections

1999 **\$55.8**2000 **\$47.8**

Based: Interviews with 50 Fortune 1000 companies about their PC buying requirements and budgets

Source: Forrester Research Inc., Cambridge, Mass.

Cluster servers

IBM and Amdahl Corp. have introduced packages of hardware and software for sales of clustered servers combined with shared storage. A new version of IBM's RS/6000 Sys — the Advanced model — increases reliability of system I/O and doubles memory capacity to a maximum of 36G bytes. Pricing starts at \$750,000.

The RS/6000 HA-Sys Advanced Cluster Server includes two Sys Advanced servers coupled with IBM's High Availability Cluster Multi-Processor software. The server starts at \$640,000.

Meanwhile, Amdahl, a subsidiary of Fujitsu Ltd., has joined Fujitsu Technology servers, Amdahl LVS storage systems and services and LifeKeeper for Windows NT high-availability software into a package providing application fail-over via Fibre Channel connections. Pricing was unavailable.

Cheaper notebooks

Toshiba America Information Systems Inc. and NEC Corp. recently announced new laptops notebooks, and Compaq Computer Corp. has cut prices on existing models.

NEC's Versa Note starts at \$1,699 and features a 266-MHz Pentium MMX processor, 12.1-in. display, CD-ROM drive and 3GB 1/2-in. medium.

Toshiba's Portege 300CT costs \$1,699 and has similar features but a smaller, 10.4-in. display.

Compaq has lowered prices on its Armada 3100, 3300 and 3500 series by as much as 10%.

NT managers sweat storage

► Try new tools to manage rapid growth in NT-based storage

By Nancy Dillon

STAPLES INC. is known nationwide as a leader among office superstores. But until recently, its management of Windows NT server and storage resources was anything but super.

"We're in the middle of a huge consolidation right now," said Helen Flanagan, principal NT administrator at the Westboro, Mass.-based company. "We're just trying to get our infrastructure under control.... It's like you start with a few [NT] servers and the next time you turn around, you've got 100."

And users such as Flanagan are in good company, according to a recent study prepared for EMC Corp. by New York-based research firm Find/SVP. In fact, the survey reported that three out of four information technology managers are concerned about their ability to manage



distributed Windows NT data.

Larry Chase, NT system engineer at Pharmacia & Upjohn Inc. in Bridgewater, N.J., said in his NT environment, "a failure to plan is a plan to fail." He said his data center has added

120 NT servers in the past 18 months alone.

Flanagan said 75% of her group's 130 NT servers host multiple services such as printing, E-mail, applications and file serving. Once consolidation is complete, all printing will reside on three dedicated print servers. All E-mail will roll into one Microsoft Corp. Exchange server and all file serving will move to a few dedicated workbooks. Of the remaining servers, some will be retired and others will

NT managers, page 16

Microsoft smart card may boost nascent market

By Sharon Gaudin

SOME CORPORATE USERS are expecting Microsoft Corp.'s entrance into the smart-card arena to spur what so far has been slow growth.

The Redmond, Wash.-based software vendor recently announced that it's working on its own smart-card operating system, Smart Cards for Windows.

Due in the first quarter of next year, the system was designed to be used for corporate network access, Internet access and eventually electronic cash and credit/debit transactions.

Smart cards contain embed-

ded chips that can store financial, health and other data and interact with terminals for tasks such as debiting an account or updating insurance records.

They also can be used to validate user identification.

"A company like Microsoft entering the market only heats up the market," said Jack Grimes, senior vice president at San Francisco-based Visa International Services Association, which

Microsoft's Smart

Cards for Windows

"heats up the market."

— Jack Grimes

Visa International

Bell eases implementation woes with online certification program

By April Jacobs

BELL COMPUTER CORP. is aiming to trim some up-front server and workstation implementation costs with a software certification program dubbed DirectEffect.

The program was designed to give information technology managers a baseline look at such factors as compatibility and performance requirements, but it doesn't address factors such as network bandwidth and homegrown applications.

Bell, page 14

MIGRATION PLANS

Visa moves some apps off hosts

By Jaikumar Vijayan

A FAULT-TOLERANT distributed computing environment isn't the cheapest thing in the world to build. But for some organizations, the cost of not building one could be much higher.

That's especially true at a time when many corporations, such as Visa International Inc., are moving core applications off trusted old mainframes to distributed Unix and Windows NT environments.

Also fueling the trend are fast-growing applications such as enterprise resource planning and electronic commerce that are forcing information technology departments to provide ever higher levels of system and application availability on their distributed environments.

At Visa International, systems availability is a core issue as the company nears completion of a multiyear cutover from a slew of small mainframes to Unix-based authorization servers that connect 600,000 point-of-sale terminals with Visa's large data

Visa, page 14

Bell DirectEffect Program affirms:

PowerEdge Servers:
Microsoft, Oracle, Novell
and Informix

Precision Workstations:
Parametric, Bentley,
Autodesk, Alias and
Unigraphics

System Management:
3Com, Computer Associates,
Network Associates,
Microsoft and Intel

Visa

CONTINUED FROM PAGE A2
center mainframes.

When the migration is completed next March, most of Visa's U.S.-based credit-card authorization and data-verification applications, which represent about 12% of its worldwide transactions, will run on a battery of highly scalable Hewlett-Packard Co. Unix servers.

Unix and Windows NT servers allow companies to take advantage of much lower platform costs and relatively less expensive packaged applications — compared with mainframes. The trade-off comes in the work that must be done to make the environment as reliable as mainframes.

The nature of Visa's applications makes high-availability a fundamental priority on the Unix environment, said Jim Long, a director at Visa in San Mateo, Calif. For instance, any disruptions in processing batch information on millions of daily transactions could result in Visa picking up the tab on delayed payments to merchants.

"If you figure [the high-interest rates] on penalties, the cost to Visa would be staggering," Long said.

"We were down intermittently for a brief period of time back in 1991, and it was like the end of the world," Long recalled. "It had a totally negative impact for us" from a public relations point of view.

FOCUS ON AVAILABILITY

That's why the company is paying so much attention to making sure its Unix environment is available 100% of the time — just like its mainframes are.

On a typical day, fully mirrored HP 9000 Unix servers, software and storage subsystems in data centers on the East and West coasts evenly split the U.S. workload. In case a server goes down, all data is automatically and near-instantly routed to the other coast via a

Examples of Visa's high-availability environment:

- ▶ **Redundant servers:** Unix servers and storage subsystems in data centers on both coasts mirror one another's transactions. If servers on one coast fail, all transactions are automatically routed to the other coast.
- ▶ **Redundant mainframes:** Mainframes are located in England, Japan, California and Virginia. If one fails, transactions are automatically routed to one of the other mainframes.
- ▶ **Redundant networks:** If one network fails, all data gets routed to the other.
- ▶ **Redundant supplies:** Parts such as CPUs and disk subsystems are always kept handy at each location.

dedicated high-speed network, which is also fully redundant.

Spare parts like CPUs and disk subsystems are always kept handy at each location, and the company has in place extensive service and support arrangements with HP aimed at quickly bringing up a downed server.

The cost of such security can be steep in distributed environments, said Harvey Hindin, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y.

But it might also be inevitable for users looking to migrate a certain class of applications off mainframes and onto open environments to take advantage of benefits such as lower platform costs and packaged applications, Hindin added.

"A mainframe is still the most available environment there is. . . . Unix and NT servers still don't provide anywhere near the kind of reliability, availability and scalability that mainframes do," Hindin said. □

Dell offers online certification

CONTINUED FROM PAGE A2

Still, users who have had to do their own digging for several vendors' products may find it a boon. Here's why: When they look for a server, IT managers typically have multiple applications in mind.

With DirectEffect, manager can see whether those applications are certified Dell-compatible from one source, as well as get configuration requirements and baseline recommendations on needed server capacity for many of the applications.

The vendor's Web site (www.dell.com/directeffect) also has links to the sites of software providers where users can get more detailed information.

SIGNIFICANT OFFERING

"Having something like this is extremely important, because when you are trying to achieve certain performance levels, or tuning a system, you can start off with a known configuration instead of starting at the very baseline," said Terry Schroeder, manager of technology architecture at

Ses-Land Services Inc., a shipping company in Charlotte, N.C.

Schroeder said his company might be able to trim some time off the weeks it now spends testing servers — which costs about \$3,000 per day, depending on the complexity of the project.

One analyst said the program should get a warm reception from the corporate community, given the daunting nature of the testing and certification process.

"This is a problem for the industry as a whole," said Amir Ahari, an analyst at market research firm International Data Corp. in Framingham, Mass., a sister company to Computerworld. Ahari's research suggests that it takes corporations anywhere from three to six months to test servers.

Dell isn't the only vendor to offer a certification program. Companies such as Compaq Computer Corp. and IBM traditionally have offered similar services for hardware and software certification, but Dell is the first to offer an online-based program. □

Microsoft smart card may boost market

CONTINUED FROM PAGE A2

using smart cards with PCs. This could be great for secure access and in the long term for Internet commerce," he said.

Smart Cards for Windows is Microsoft's first step into a market that rival Sun Microsystems Inc. has been leading for nearly a year with its Java Card.

Major smart-card vendors, such as Schlumberger Corp. and Gemplus Inc., along with companies such as Visa, have put their support behind the platform-independent language and already are working on chips based on Java.

But Grimes said he doesn't see Smart Cards for Windows as a competitor to Java. "It's all complementary," he said. "Visa's offering is going to be an open platform, so Java or Windows could run on top of it. It will give our customers more choices."

EAR TO THE GROUND

Ali Adamou, technical consultant for Concord, Calif.-based Concorde Solutions, the information technology subsidiary of BankAmerica Corp., said he's eager to check out the coming smart-card technologies.

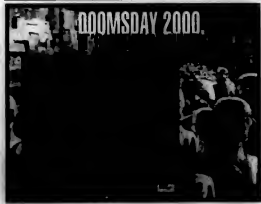
"We'll have a choice between Java and Windows," he said. "We'll figure out which one is easier to code and develop based on our environment. Knowing our developers, they'll lean more toward Java because it's a cross-platform."

Microsoft, known for complicated and heavy operating systems such as Windows NT and Windows 95, scrapped its old technology and built Smart Cards for Windows from scratch, said Phil Holden, Microsoft's group product man-

ager for the effort. It's an eight-bit environment with only 30 application programming interfaces (API), compared with 2,000 APIs in Microsoft's Windows CE operating system for handheld computers and 10,000 APIs for Windows 98.

Smart cards have been slow to appear in the U.S., and even early adopters in Europe only now are rolling out large deployments.

"Companies aren't ignoring smart cards. They're just waiting for applications to come out and for this to really take hold. Microsoft joining in is going to help that," said Eric Hemmendinger, a senior analyst at Aberdeen Group Inc. in Boston. □



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Better answers:

NT managers sweat storage

CONTINUED FROM PAGE A3

become dedicated application servers that can be tuned as needed.

She said the effort is key to storage management tasks, such as capacity planning. One software tool she plans to use more is Storage Resource Manager

(SRM) from HighGround Systems Inc. in Marlboro, Mass. She said she now uses the tool to predict expansion on six servers with RAID arrays and to check for vulnerable files missed in overnight backups.

A new version of HighGround's SRM, called the Enterprise Edition, was announced last week. The version still provides disk-space alerts, user-specific consumption quotas and file reports that aren't backed up.

But the Enterprise Edition is based on a Microsoft SQL database rather than Access, and it provides capacity trending over 365 days, not just one month. An SRM server costs \$2,500, and each man-

aged server costs \$400.

Chase also is using the new Enterprise Edition of HighGround's SRM. "We originally thumbed our noses at the product because it was built on Access," Chase said. But with SQL integration, he said it's more suitable for enterprise implementation.

Other products that compete with HighGround's SRM include SAMS-Vantage from Sterling Software Inc. in Rancho Cordova, Calif., and CenterStage from Softworks Inc. in Alexandria, Va. Both SAMS-Vantage and CenterStage have agents for Unix and NT. HighGround's SRM is still limited to NT.

"Our mainframe storage is growing at about 35% a year, our Unix data at 65% and our NT storage growth rate is more than 100%," said Ted Keller, manager of resource management at freight company Yellow Corp. in Overland Park, Kan. "It won't be long before [NT storage] is a major management issue."

Keller recently purchased several CenterStage licenses on the Unix side. He said because his group's goal is to fold Windows NT into the schemes governing mainframes and Unix machines, he will likely deploy CenterStage on NT.

"There are decent backup tools for NT but we want to apply data center disciplines, and it would be nice to have a common tool that will age files, do cleanup and plan for capacity on multiple platforms," Keller said. □

THEM:

NEW PRODUCTS

SCINET INC. has announced the CD-Server ES family of entry-level, network-attachable CD-ROM libraries.

According to the Sunnyvale, Calif., company, the ES10x has a five-disc capacity, the ES10x has a 10-disc capacity, and the ES10x can house 15 discs. Users gain access via Windows, OS/2 or DOS commands. The libraries integrate into NetWare environments and can synchronize users and passwords with Windows NT primary and backup domain controllers.

List price for the ES10x is \$999. The ES10x costs \$1,199; the ES10x costs \$1,399.

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MICROTOUCH SYSTEMS INC. has announced Iliad 600, an electronic whiteboard designed to replace traditional conference room whiteboards.

According to the Methuen, Mass., company, Iliad 600 looks like a whiteboard but connects to a PC on which it captures written data. From the PC, the data can be saved, filed, printed, distributed electronically or shared with remote meeting participants.

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WHAT SHOULD WE

BE DOING?



Managing



As the clock winds down,
year 2000 project managers tell us
their priorities as they prepare
for the final 12 months.

By Kathleen Melymuka

Checklist 1999

**YEAR
2000**

YOU THINK YEAR 2000 has been tough so far? Just wait. "Next year is going to be the most intense and most expensive year," says Lou Maroccio, a year 2000 analyst at Gartner Group Inc. in Stamford, Conn.

For example, he says, most companies will need to spend from five to 16 months testing, and many haven't yet begun. Four out of five commercial software packages still aren't compliant, which means vendors and users will be scrambling next year. And companies will be spending as much as 30% of

their total year 2000 budgets on contingency planning and implementation, activities for which many never even planned.

Next year, project managers will have to fight hardest to retain control over how they spend their time. Because many companies will move into fiscal year 2000, "a much higher volume of failures will occur in '99," Maroccio says. "They'll have to deal with [other priorities] while dealing with failures."

Having a clear sense of where you're going as the year begins
Checklist 1999, page 75



Words

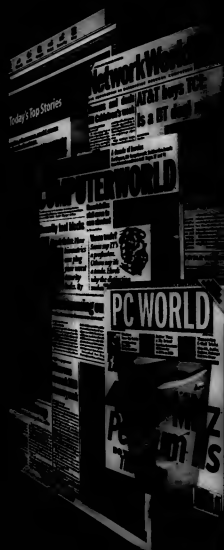
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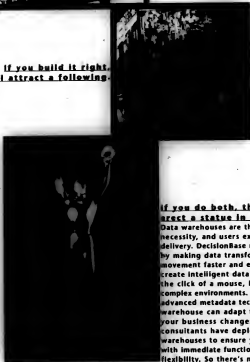
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Checklist 1999

CONTINUED FROM PAGE 71

may help keep things in perspective as systems become suicidal. Ten project managers talked about some of the big issues they plan to address as the clock winds down:

REMEDATING BUSINESS BUSTERS

"We've been concentrating on remediating high- and medium-critical components in terms of risk to the business," says Rowan Alexander, a Houston-based year 2000 project manager for infrastructure at Amoco Corp. "In 1999, we're taking those we didn't get to. Then we'll decide whether to remediate low criticals. Those are applications, such as an online encyclopedia, where failure might cause inconvenience but not financial loss or any risk to health, safety or customer service."

"In some cases, it's not worth the effort and cost," Alexander says. "We'll assume the risk and fix them if they fail. But the risk of a cumulative failure of low criticals may change our strategy. Then we'll be remediating those, and if they're worth remediating, they're worth testing."

TESTING THE WORKS

"We've been remediating systems, checking them on an individual basis and putting them in production, and now we need to test them as a whole," says Roger Buck, year 2000 manager at Chrysler Corp. "I see that as one of the major things."

SELECTIVE TESTING

"We soon will be finished [with] all our internal programming," says David Kelble, year 2000 project manager at Wawa Inc., a convenience store chain based in Wawa, Pa. "Now that we're in pretty good shape, testing is where we've made some decisions to take some chances."

"We rated our software packages from 1 to 6. A 1 is where a failure would put us out of business; a 6 is where a failure would have no impact — or productivity might actually increase if it failed," he says. "We're testing all [critical] products. For the middle, if a vendor has a good track record, we'll probably believe them [and won't test]."

If it's a vendor where we had to send back every release two or three times, we're going to test them. On the low end, we won't test."

MAINFRAME TESTING

"In the IT area, we'll spend most of the first half of '99 finishing using the Y&K LPAR [a parallel mainframe system used for testing] to test our remaining [mainframe] systems and our vendor software packages that run on mainframe systems," says Jack Sanders, year 2000 project manager at Fina Oil & Chemical Co. in Plano, Texas.

TESTING WITH PARTNERS

"The CIO and I have teamed up to drive the project through the organization," says Tony Ryan, vice president and chief financial officer at Travelers Express Co., a payment services company in Minneapolis. "He does the tech side, and I'm the business person."

"We have close to 70,000 retail agents, check cashers and financial institutions that we deal with in the marketplace, so we want to test with a sample of those to make sure we can handle transactions. We're hoping to publish the results on our Web site so that our customers can determine whether they want to rely on the testing we've done with similar customers [or] test separately with us," Ryan says.

CONTINGENCY TESTING

"We will be finishing off the remainder of testing and deployment and putting the finishing touches on contingency planning," says Skip Patterson, year 2000 project manager at Bell Atlantic in New York. "This program has taken us and others through the most thorough testing that's ever been done from the dawn of time, and this game's not over till it's over."

"We'll continue to test and get more refinement on testing through the year. We're not just testing our systems from computer and programs point of view; we're also testing our contingency plans to be sure they work. That will be a pretty consuming task next year," he says.

DESKTOP APPLICATIONS

"We're wrapping up a lot of testing — including vendor applications such as Oracle financials and PeopleSoft — and we'll be finishing that toward the beginning of 1999," says Norman Friedrich, a year 2000 project manager at Federated Investors Management Co. in Pittsburgh.

"On the desktop level, we're getting involved with all the different users of our 1,600 PCs," he says. "Some of them may have their own spreadsheets or desktop databases that they've created, and we'll be going through those and doing the renovation process."

EMBEDDED CHIPS

"On the business side, we have only three major applications to finish, and our plan is to finish in March of '99," says

Wally Walsh, year 2000 project manager at Pacific Power Co. in Reno, Nev. "On embedded systems, everybody — not just in this industry, but worldwide — is playing catch up."

"We all get a late start in understanding the implications of year 2000 with embedded [systems]. Work-arounds are more difficult because of how limited testing time is and how complicated some integrated testing might be," he says. "We have a core team of champions representing each line of business, and we'll complete the identification of criticals [and] get those corrected by September 1999."

SUPPLY CHAIN

"We've done the usual paper exchange with our customers and vendors, but we're going beyond that," Walsh adds. "We're going out to our major supplier sites and visiting with them in a friendly way to get a better feel if they're making progress on their Y&K issues or not. I and some of my team will go, and on our major suppliers, we may get our executive sponsors involved."

KEEPING PEOPLE

"Resource management will be a critical issue," Alexander says. "As government and more companies start kicking in [on year 2000 work], we expect resource demand will escalate. So retaining key [people] will be an effort for us."

PREPARING FOR THE WORST

"The most important thing to be doing is contingency planning," says John D. Ogens, director of the Global Year 2000 Program at Monsanto Co. in St. Louis. "We do an analysis to understand what possible interference there could be to our business processes and try to anticipate that. If we think, for example, that there is the risk of an interruption of major raw materials, we would probably look to have additional inventory on hand so we could work through that interruption."

EMERGENCY RESPONSE

"We'll be seeing some year 2000 problems starting in 1999," Alexander says. "There are some key dates that we will start doing some planning on in terms of emergency response and business resumption. An example of emergency response is assembling a team ready to travel to address any telecommunications failure, so they can get that up and operating."

GATEKEEPING

"After testing, we have to make sure we're not making modifications to code to make something that was compliant not compliant," Ryan says. "Keane [Inc., a Boston consulting firm.] has established an oversight process that looks at everything going into production. Code has to be signed off by the developer and then we do a code walk-through, and it has to be signed off by our production manager."

Checklist 1999, page 77





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The World's Technology Magazine

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Checklist 1999

CONTINUED FROM PAGE 75

FOLLOW UP WITH PARTNERS

"Next year, most of our time will probably be spent doing vendor inquiries to make sure our external services providers are compliant, and we have to test external interfaces with banks and financial services providers and some of our bureaus," says Chuck Wiberley, MIS manager at PMA Insurance Co. in Blue Bell, Pa.

BRAGGING RIGHTS

"We're also putting out letters to agents, brokers, clients, employees and people marketing the fact that PMA is ahead of the curve — we're done and can run MIS to other things," Wiberley says. "We're seeing if we can turn the tables on the competition."

GRABBING OPPORTUNITIES

"Year 2000 will also offer opportunities," Kelbie says. "For example, we have [automated teller machines] in every store, and we're one of the few places that will be open all the time during the winter. If people are going to pull extra money out, maybe we should up the number of times the bank restocks. If we're the only ones who have money, customers will come in."

PLANNING FOR MIDNIGHT

"The last thing is deciding what is our very specific rollover plan," Ogens says. "What do we think we want to have happening at the date actually changes?"

Better late than never

Next year, as project managers who are ahead of the curve are wrapping up the final elements of their year 2000 projects, some companies will be just starting. Project managers who have been there, done that, offer the following advice to latecomers:

Clear the decks — "Make sure you have identified the truly mission-critical things and clear the decks of anything at the margin," says Skip Patterson, year 2000 project manager at Bell Atlantic in New York. "In systems, there are a lot of perfectionists who like things neat and tidy. Forget it. You'll be neat and tidy — but dead."

Tools — "We used a Platinum [Technology Inc.] code analyzer, and after a few months we knew how much date impact there was, which allowed us to prioritize," explains Wally Walsh, year 2000 project manager at Pacific Power Co. in Reno, Nev. "I'd [do that], then prioritize systems that keep the business afloat."

Flagback — "Try to make use of information being made public to make some quantum leaps," says Roger Buck, manager of year 2000 at Chrysler Corp. "For example, there's a database from the Auto Industry Action Group (www.aig.org) on shop-floor equipment year 2000 readiness and a more general one from EDS (www.vendor2000.com) on software products. It's riper."

Work-arounds — "Prioritize the key systems," says Tony Ryan, vice president and CFO at Travelers Express Co. in Minneapolis. "Then start bringing various departments together to create manual work-arounds for things you won't get in time."

WRAP UP

"The challenge will be trying to wrap up all the loose ends," Kelbie says. "To wrap up, we have a little programming left, some testing, vendor contracts, seeing how the supply chain is doing, contingency planning. We wrote up on a flip chart all the things we have to do to say we're finished. But now when I go to sign off on something that's finished, I look on the flip chart to cross it off and sometimes, it's not there. We're finding there are more things out there — so many tentacles of this project — that trying up the loose ends is difficult."

NEXT?

"Toward the end of the year, I'll be trying to figure out what the next project will be after we're done with this," Friedrich says. □

Melymuka is Computerworld's senior editor, management.

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YEAR 2000 SCOREBOARD

An occasional series on year 2000 trends, issues and statistics

What the jury may see

If your company is a defendant in a year 2000 lawsuit, it may have one strike against it before the jury is even seated.

Three out of four people in a recent survey said they believe executives of big companies often try to cover up harm caused by their companies and products. The survey of 1,012 adults was conducted last month by *The National Law Journal* (www.nlj.com) and DecisionQuest, a consulting firm in Torrance, Calif., that helps attorneys evaluate strategies for high-risk and complex litigation.

David Davis, a senior vice president at DecisionQuest, says that attitude toward corporations backs up the results from a September 1997 study his firm conducted on issues relating to year 2000 litigation. Those key findings resulted in the following conclusions:

• **Potential jurors are quick to see that it's "all about money."** They believe big businesses can do everything if only they commit enough resources. Otherwise, the companies are out to save a buck.

• **Many cases are seen as combining a high depth of feeling by jurors with a low level of sophistication.** DecisionQuest says that's a "dangerous combination that can lead to [a] high level of punitive awards."

• **The year 2000 problem is seen as one that can be easily fixed.** If it isn't, there are people who can be held responsible. Business owners, boards of directors and senior executives will be asked the following in court: "When did you know?" and "Why did it take you so long to take action on a problem that was so widely reported on and has such serious implications for your stakeholders?" according to a recent article by Lisa J. Marshall and Lloyd Raines, which can be found at *The Year 2000 Information Center Web site* (www.y2kinfo.com). They are members of Syntax Communication Modeling Corp. (www.syntax.com), a Washington-based leadership and communication skills advisory firm. — Rick Sais

Q. Do you think the year problem is complicated or simple?



Source: National Law Journal/The DecisionQuest poll of 1,012 people ages 18 and older, Oct. 1-4

A long shelf life for contingency plans

It's mid-January 2000. Your company has survived the year 2000 threat. What do you do with your contingency plans? Hang on to them for a few more years, advises Terri Kuchner, a vice president at NationsBank and manager of general bank contingency planning.

Kuchner, speaking at a conference session last month on contingency planning at *Network/Interop '98* in Atlanta, said year 2000 teams and contingency planners should keep the plans around in the event the power goes out, for example, or the elevators fail. Indeed, year 2000 experts have suggested that your millennium fixes must be tested on several dates well into 2000 before victory can be reasonably declared.

Recession looming?

Economist Edward Yardeni (www.yardeni.com) said he believes there's now a 90% chance the year 2000 problem will cause a global recession, up from the 60% probability he cited in March and the 40% chance he cited a year ago.

MORE ONLINE

For the most up-to-date information on the year 2000 problem, visit Computerworld.com.
www.computerworld.com/year2000

he missing elements in most discussions of year 2000 are the people who will be affected.

PETER G. W. KEEN

COMPANIES DON'T 'SOLVE' YEAR 2000 BY IGNORING CUSTOMERS



That's why, in my last column, I introduced a distinction among Y2K, 12K and You2K. Y2K involves looking after the computer problem; 12K addresses how to look after yourself and your family; and You2K is about looking after customers and employees.

Any company that speaks of customer service, customer relationships and customer satisfaction needs to recognize that all that talk is just talk if it doesn't include You2K in its planning.

I predict you will soon be getting letters like this from customers:

To whom it may concern:

I fully understand no organization can guarantee its systems won't be affected by Y2K. I also understand that, even if you are fully year 2000-compliant, you may be affected by failures in some other organization's systems. That said, I am your customer. "Service" won't mean anything if the year 2000 hurricane hits my family.

What are you doing now to help your customers? I'm asking this of all companies whose computer systems could affect my family's well-being. I will move my business to the ones that provide me with convincing answers. I have no other choice.

It's not enough to tell us you're working on year 2000 and that you and your suppliers will be Y2K-compliant. Neither you nor they can guarantee your ability to provide me with the service I have today on 01/01/00. I don't expect you to guarantee that year 2000 won't strike my loved ones and me. But I do expect you to include us in your hurricane warning, alert and protection plans.

Sincerely, (Customer)

You can wait for the letters to pile up, or you can show your customers you're taking care of them. How? Start by sending them this letter:

Dear (Customer):

You have been a good customer of our company for (X) years now, and we value your business. We're writing to you today to tell you what we're doing to make sure you are protected as much as we can against any problems caused by the year 2000 bug.

We're working very hard to fix our own systems, but there's inevitably a chance that just a single line of computer code out of the (Y) million lines we're analyzing, updating and testing could trigger some unanticipated error. There's also a bigger chance that a problem in some other organization's systems could result in a problem for you. We don't want to be alarmists, and we hope there won't be such a problem, but we regard it as our duty to look after our customers as best we can.

Attached to this letter is a short pamphlet that explains year 2000 and offers suggestions about what you should do to guard against it. It tells you what records to keep, how to examine your account statements and whom to contact in our company if you discover something unusual in routine transactions with us. It also includes some safety measures you may wish to take just in case there are problems with utilities, as some experts have predicted.

We're also offering you a protective device against Y2K. We've arranged a line of credit

for you to draw on from Jan. 1, 2000, to March 31, 2000, if any of the following (or similar) incidents occur:

- Your paycheck is not issued.
- Any Medicaid, Veterans Administration, Social Security, health insurance claim or similar payment due you is delayed because of Y2K.

You'll also be pleased to know that we're providing all of our employees with a training program about Y2K, explaining how to anticipate and spot problems and how to help our customers if problems do occur.

Sincerely,

John B. Executive
President

This may seem as basic as A-B-C, but in speaking about You2K with CIOs, CFOs, COOs and heads of marketing and human resources, I've found none who has even thought about dealing with their customers' year 2000 concerns. None of them knows of any initiative at his firm to do so. I've also asked about 30 family members, friends and colleagues — people from all walks of life — if they have received any letters from the companies they depend on offering year 2000 advice, guaranteeing assistance or explaining where to go in case of problems.

Not one of them has heard anything of the sort. A few have gotten a letter saying, "We're working on it" — "it" being Y2K — and that "it's all going to be all right."

Is this customer intimacy? Is this putting the customer first? Is this quality service? Our systems might disrupt our customers' lives and destroy our credibility with them. If customer service means anything at all, let's speak our heads out of the sand and start responding to our customers' Y2K concerns. □

The second edition of Keen's book, *The Process Edge*, will be released in December by Harvard Business School Press. His Internet address is peter@peterkeen.com.

JANUARY 1 2000. WHO ARE YOU GOING TO CALL?

Come January 2000, if you can't prove that you did everything in your reach to prevent Year 2000 disruptions, you will be liable. A great solution to this problem is available now: it's called StarTeam 2000.

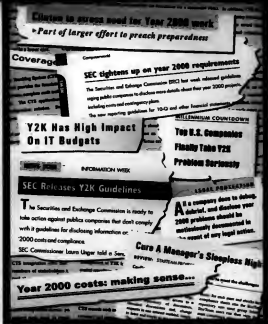
Will you pass the Y2K liability test? Do you know what was done to prevent disruption? Can you prove that you did your best? Did you apply best industry practices? How will you satisfy the new SEC requirements for disclosure and reporting?

On and after January 1st 2000, not having the right answers to the above questions could get you and your organization in serious trouble. StarTeam 2000 Compliance Tracking System provides a robust and cost effective solution for the management of Year 2000 initiatives, helping you build a self-documenting, fully auditable repository of record for all your compliance efforts.

StarTeam 2000 addresses your biggest Y2K challenges today:

- Managing all compliance initiatives across the enterprise
- Creating and maintaining documentation of all compliance efforts
- Building a complete audit trail of your company's compliance
- Improving strategic decision making by increasing project's visibility
- Shortening the project's lifecycle
- Expediting contingency plans and crisis management support
- Allowing you to manage liability in case of business interruption
- Disclosing adequate information to industry authorities, customers and investors

If all these problems weren't enough, new SEC rules have expanded the reporting requirements for public companies. Organizations have to disclose Year 2000 costs that



will have material impact on their operations. Year 2000 disclosures should include state of readiness, costs, risk and contingency plans.

With StarTeam 2000 you will be able to create a Repository of Record for all Y2K-relevant corporate assets, and use it to manage:

- All compliance efforts
- All contingency plans
- The audit trail of your Y2K efforts
- Your liability

Remember, unless you can prove your diligence, what you do to prepare for the Year 2000 won't be enough!

StarTeam 2000 Compliance Tracking System Benefits:


- Complete, well defined, sophisticated, compliance tracking model
- Timely, continuous and accurate reporting against one centralized repository of record
- Flexible implementation options and rapid deployment

- Shortened project schedules
- Satisfies most auditability requirement for legal liability management
- No need to create yet another development effort, when you don't have resources available
- Integration with StarTeam, StarBase's team collaboration solution
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Review Center

Mac OS 8.5

Pricey for Modest updates

By Galen Gruman

EVERY SIX MONTHS, a new version of Apple Computer Inc.'s Mac OS appears, causing system managers to wonder if the installation effort is worth the hassle. Mac OS 8.5 adds functions that should appeal to users in creative services and other Macintosh-using departments, but the answer is still, "it depends." Much in the way Windows 95 has limited appeal for corporate PC users, Mac OS 8.5 won't be too useful to most corporate Macintosh users.

Two enhancements will save time within the production en-

vironmental tests showed a doubling of performance. The other is faster network file copying, although there's a catch: You must use a 100M bit/sec. Ethernet network and TCP/IP. Apple has shipped 10M bit/sec. Ethernet cards on most Macintoshes, so you'll likely need to upgrade yours. Apple claims the performance now surpasses that of Windows NT, but I was unable to test network performance.

Of the other enhancements, the most significant is the new Network Browser, a utility that gives you quick access to net-

work volumes and lets you set volumes as favorites for quick remounting. That sure beats the clunky Chooser, which you can still use.

I was happy to see Apple add automatic adjustment for daylight-saving time, long available in Windows.

Apple's TrueType fonts and character maps now support the euro symbol, and there's an installation option to load Chinese, Japanese, Korean, Indian,

Hebrew and Arabic fonts for use in a Web browser. If all are loaded, these fonts take about 20M bytes. It's a nice touch for those who work internationally.

For mixed-platform environments, Apple has added a considerable list of Windows file extensions to its PC Exchange utility, which lets the Macintosh open PC disks and maps the

file extensions to the correct Macintosh icons to make the files double-clickable. In previous versions, you had to add all the extension/icon translation information. However, Mac OS 8.5 renders nonfunctional any PC-compatibility cards you may have — an odd decision.

Finally, administrators will like the fact that you can set up all installation options for the Mac OS and its add-ons before starting installation. Before, you had to do each in succession, meaning you couldn't go far from a Macintosh that was being upgraded. But when you want to reinstall, add or remove software, Mac OS 8.5 won't show you what's already installed — making the process guesswork. Mac OS 8.5 comes with the Simple Network Management Protocol (SNMP), so you can administer it remotely and install software using any Management Information Base 2.0-compliant SNMP console on your network.

Apple is touting Sherlock — its new search capability, which uses several Web engines to find files on the Internet — as well as its own engine to search your hard drives and network volumes. Using one interface to search over several Web search engines is certainly handy.

More handy is the content search and summarization feature. But it requires you to set up an index — a process that takes about an hour per 400M bytes, even on a PowerPC G3-based Macintosh. And the indexing engine that lets this feature do its thing doesn't work automatically — you must manually update the index.

Mac OS 8.5, page 82



A network browser makes it easier to access network volumes, while the Sherlock search tool can help you find documents based on their content

vironment, as well as make up for the upgrade costs and installation time if you're in a high-volume prepress, digital-media or similar operation.

One such time-saver is that AppleScript is now PowerPC-native, which greatly improves the performance of the popular scripts used to automate programs and reduce labor. My

MAC OS 8.5

REVIEW: STREAMING TECHNOLOGY

Still rough waters

By David Strom

SPENDING up your Web experience with video and audio has been a frustrating task for both the viewer and creator of the content. Tools are poorly crafted, sound and video quality are nowhere near broadcast standards, and getting the pieces to work with your browser and sound and video setup can be time-consuming.

Unfortunately, things aren't much improved with the latest beta release of RealNetworks Inc.'s System Ga and Microsoft Corp.'s NetShow Version 3. These tools can be useful for producing training films, distributing corporate speeches and listening to broadcasts over the Internet, although the quality in all but the best

of circumstances is akin to listening to your AM radio while underwater.

I tested Beta 2 of Ga and the shipping Version 3.0 of the Microsoft package.

One concern is that the authoring process relies on many pieces. If even one piece isn't working, your sound or video presentation doesn't happen. Once you have your audio or video content, you use either the RealNetworks or Microsoft encoder to create a streaming file, using one of many file formats. Then you add a link to the streaming file on your Web page. Finally, users need to install and configure the appropriate player application and have it work with whatever browsers they're using. If all goes well, the audio and video content is sent to the browsing machine and begins playing inside the player's own window.

That process is cumbersome, and it isn't my only issue with both products. I had trouble matching file formats with player versions, tying together the Web and media server applications and setting up my encoding session.

Part of the problem with both players is understanding which version of the player is required to listen to and to view a piece of the content. There are two dimensions to the problem: the file format of the content itself and how it was encoded. That means you'll probably have to upgrade to the latest versions of either player—and even then, you might need new pieces to support a new encoding scheme or to get the best performance possible.

For example, to view a MPEG video and audio clip over the Internet using the RealNetworks G2 player, I needed to download a special plugin from Digital Broadcasting Corp. to make the clip play better, and it took four tries to complete the download. However, even with that plugin I still couldn't view the clip, because I needed a T1 connection to the Internet.

That illustrates both the promise and potential problem of RealNetworks: You have the ability to automatically update your player over the Net, but the update may not always work. The bottom line is that you need to be clear

about what file you intend to hear and what player you have installed. Microsoft and RealNetworks are corporate rivals, and even their products don't like each other. Microsoft's player supports more file formats than RealNetworks'. Many Web sites I found offer both RealNetworks and NetShow/Windows Media Player formatted content.

Based on some limited testing over the Internet, audio clips sounded better in Win-



RealPlayer G2 server, encode and player RealNetworks
RealPlayer
www.real.com

Vendor view: "RealPlayer G2 includes a powerful new audio Codec, which increases the listening response of audio by 20% for both 16-bit kHz/44.1 and 32-bit kHz/48.1 medium compression, and new video postfiltering capabilities create smoother images to and more." — press release, July 19, 1998



NetShow server, encode and Windows Media Player Version 3.0
Microsoft Corp.
Redmond, Wash.
www.microsoft.com

Vendor view: "Microsoft enhanced the streaming multimedia services offered by NetShow in Windows NT Server to deliver... bandwidth ranging from 2.4 kbit/sec. to 320 kbit/sec.... Enhancements to the new Media Player included the ability to play back most local and streamed multimedia files, including ASF, AVI, WMV, MPEG, QuickTime and RealAudio and RealVideo content." — press release, May 4, 1998

downs Media Player than in RealNetworks' G2. I didn't find much difference in audio quality between Ga and RealPlayer 3 audio files. I conclude that the level of quality on both, along with the steps involved, is unsatisfactory. □

Strom is a reviewer in Fort Washington, N.Y. He can be reached at david@strom.com.

Mac OS 8.5

CONTINUED FROM PAGE A1

or have the Mac OS run the indexes on a schedule.

When this feature was first shown in 1995 as part of the Copland operating system, Apple promised it would work automatically. But when Copland was killed in 1996, so went the new file system and operating system kernel that would have allowed such automatic indexing. An Apple spokesman says Mac OS X, due next year, may deliver on the original vision, thanks to its new kernel and file system.

Worse, the summarization feature, which creates summaries of your documents, is limited. It works only on files whose file types are Text, meaning that the major word processor formats such as Microsoft Corp.'s Word aren't supported. This limitation renders Sherlock summarization pointless for most users, unless

you buy or already have the \$99 MacLinkPlus program from Trumbull, Conn.-based DataViz Inc. (free in Mac OS 8.0 but not in 8.5), which lets Sherlock work with most file formats. The good news is that the summaries are accurate.

All in all, the additions are nice, if unevenly implemented. But if the speedup of the faster network file copying and AppleScript aren't critical to you, a \$99 upgrade is costly. (Keep in mind that Mac OS 8.5 runs only on PowerPC-based Macintoshes.)

Finally, Apple says Mac OS 8.5 is the most stable Macintosh operating system yet. Maybe. It certainly was stable when I installed it in a new System Folder. But when I installed it over my existing Mac OS 8.1 System Folder, to retain all the preferences and support files for my various programs and operating-system extensions, I was rewarded with constant system crashes, even after updating every program and driver to the latest version. When I upgraded to Mac OS 8.0 and then to 8.1, I had no conflicts. I may have been lucky then and unlucky

now—it took eight hours to trace the conflict, and Apple has no list of known conflicts. Someone else might have a smooth update.

When I first installed Mac OS 8.5, I was afraid it wouldn't work on my non-Apple Power Mac. Apple shut down the licensed Macintosh clone companies a year ago and won't test those companies' systems for compatibility. If you buy Mac OS 8.5 for a clone and it doesn't work, you can't get your money back. Usenix Computer Corp. in Fremont, Calif., has done basic compatibility testing for its SuperMac line. (The results are at www.supermac.com.) Motorola Inc.'s Austin, Texas-based Computer Group offers no such help. The other licensees are out of business.

Now that I've resolved my software conflict, I'll stick with Mac OS 8.5. But I can't recommend it as a must-have unless you're a heavy AppleScript user or network file copier. My advice: Test it on your system. If it runs smoothly and you have the money, get the bells and whistles. Otherwise, ignore it. □



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In Depth

How to succeed in

A new business

that innovates

of IT is more

but not a p

E-BUSINESS

What's the secret for a successful electronic-commerce initiative? Who's really making or saving money on the Internet, and what have they done differently from those who have failed? I stumbled upon the answers to those questions as I began researching best practices in electronic commerce in 1995. The results of more than three years of research and 40 case studies are summarized in my new book, *Customers.com: How to Create a Profitable Strategy for the Internet and Beyond* (www.customers.com).

In researching the book, I worked with and interviewed scores of visionary businesspeople such as John Samuel, director of interactive marketing at American Airlines; Dudley Nigg, executive vice president of online banking at Wells Fargo & Co.; Sally von Bargaen, president of PhotoDisc, Inc.; Chet Huber, general manager of General Motors Corp.'s OnStar division; and Carolyn Miller, director of the FastLane project at the National Science Foundation (NSF).

How to succeed, page 86

How to succeed in E-BUSINESS

CONTINUED FROM PAGE 35

Each told a fascinating story — a story about how they thought about the issues confronting their businesses, what they understood about what their customers wanted and needed and what they had done to respond to those customers' spoken and unspoken needs. *Customers.com* goes behind the scenes at 16 different businesses and shows exactly how those organizations have evolved their electronic business strategies, their organizations and their technology infrastructures.

All the organizations in the book have made innovative use of information technology. But their stories don't begin and end with technology. Equally important were the business process and organizational changes they implemented. So in addition to your CIO, I hope you'll share this book with your marketing director, your vice president of sales, your head of customer service, your strategic technology planner and your CEO.

KEY TO SUCCESS

What's the winning formula? It starts with focusing on your existing customers — figuring out what they want and need and how you can make life easier for them. Then you can expand your efforts to reach prospective customers. Once you lure those prospects, closing the sale and cementing a profitable, long-term relationship becomes a snap because you have already made it easy for customers to do business with you.

Sound easy? Well, it isn't. The idea of making it easy for customers to do business with you is simple. Implementing that vision is hard. As the *Customers.com* case studies show, each organization has been hard at work for more than 24 months. That work requires a visionary leader — typi-

cally someone with a marketing bent and background. It requires a lot of perseverance. It requires a good deal of investment. It requires a unique partnership between business pragmatists and IT visionaries. And it requires buy-in and participation from the entire organization.

One of the important insights I gained by chronicling the experiences of Internet commerce pioneers is that they don't focus only on the Internet. Instead, they consider all the different ways customers interact with their companies: on the phone, face-to-face, by E-mail, using automated teller machine or via kiosk, PalmPilot, pager, smart card and even — in the case of GM — smart car. They focus on improving the customer's experience across channels of interaction. They concentrate on streamlining all the business processes that impact the customer. And in time, they evolve an IT infrastructure that supports all those different modes of customer interaction.

CRITICAL SUCCESS FACTORS

Let me outline the important findings from the book. I discovered that there are really eight things you will need to get right if you're serious about competing in the Information Age. Those factors are the heart of *Customers.com*.

1. TARGET THE RIGHT CUSTOMERS

American Airlines and National Semiconductor Corp. are great examples of companies that have carefully targeted their Web initiatives to the right customer: the one who makes a difference to the bottom line. American Airlines targets its Web site at its most loyal customers: its 32 million AAdvantage frequent fliers. National Semiconductor targets the people who have the greatest influence on the decision to purchase its products: design engineers.

2. OWN THE CUSTOMER'S TOTAL EXPERIENCE

Whether online or off-line, you need to deliver a consistent, "branded" experience to customers by saving them time and aggravation and by giving them control over their experience of doing business with you. The Hertz Corp.'s Number One Gold Club provides a great example of the kind of business process redesign required to own the customer's total experience, both on the road and in cyberspace. And Amazon.com Inc. has mastered the customer's total experience for online retailing.

3. STREAMLINE BUSINESS PROCESSES THAT IMPACT THE CUSTOMER

Both Babson College and the NSF understood clearly who their end customers were (students and researchers, respectively). Yet both organizations discovered that to do business-process design right, they had to involve a variety of other key stakeholders in the redesign effort.

4. PROVIDE A 360-DEGREE VIEW OF THE CUSTOMER RELATIONSHIP

Anyone in your organization who deals with a customer needs to have a complete view of that customer's relationship with your company — all his products, accounts and past interactions. Whether the customer helps himself to information over the Web or the phone, that information must be accessible. Both Bell Atlantic Corp. and Wells Fargo have worked long and hard to provide this 360-degree view across a variety of interactive channels.

5. LET CUSTOMERS HELP THEMSELVES

Dell Computer Corp.'s Dell Online and iPrint Inc., the online print shop, provide great examples of how far you actually have to take self-service when you do business on the Web. Customers want to be able to do everything themselves:

researching, configuring and ordering products, troubleshooting problems, checking on the status of a repair or print job, tracking a delivery — the works.

6. HELP CUSTOMERS DO THEIR JOBS

When your customers are businesspeople, you need to understand exactly how they do their job and where your company fits in. That's what The Boeing Co. did when it designed its Web-based spare parts ordering system for airline maintenance professionals. That's what PhotoDisc undertook when it began to offer digital photography to graphic design professionals. The key: Save the customer time and let them play "what-if" games with your inventory.

7. DELIVER

PERSONALIZED SERVICE

In this era of one-to-one marketing, how will you know what customers really value in the way of personalization? Take your cues from *The Wall Street Journal Interactive Edition* in the cyberworld and from GM's OnStar division in the physical world. Both companies discovered that what customers value is the depth of the interactive experience. If you can provide a level of personalized service that isn't possible any other way, you'll become part of their daily lives.

8. FOSTER COMMUNITY

Both business-to-business player Cisco Systems Inc. and business-to-consumer player Tripod Inc. have mastered what it takes to build online communities that generate value. Cisco's customers answer one another's most technical questions. Tripod's members vie with one another to create the most interesting content. ☐

Seybold is founder and CEO of Patricia Seybold Group (www.psgroup.com), a business and technology consulting firm in Boston.

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By Patricia B. Seybold
with Robert J. Marshall
1998, Times Books/
Random House, New
York, 300 pages, \$27.50
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IT Careers

MOVING



TARGETS

WITH COMPANIES RELOCATING MORE IT STAFF AND CONTRACTING GIGS OFTEN FAR FROM HOME, A CHANGE OF SCENERY MIGHT BE COMING SOONER THAN YOU THINK

BY NATALIE ENGLER

Gail Matthews could tell you relocation stories that would make you kiss your hardwood floors.

Within three months, the campus site support manager at Sun Microsystems Inc. and her husband sold their house in Phoenix, bought a new home in Lafayette, Colo., and moved themselves and their four children from the Arizona desert to the Rocky Mountains.

Talk about stress: "We had everything: leaving family and community ties, changing two jobs, our kids changing schools," Matthews says. "If there was something on the top 10 list of stress-inducing events, the only one we missed was divorce."

Matthews — one of the 100-plus employees Sun transferred from California or Arizona to a Denver suburb during the past year — decided that, despite the upheaval, the move would be worth the price. Her new position reduces the amount of traveling she's required to do. It gives her more time to spend with her family. And being part of the desktop and server support team for a fast-growing campus (it swelled from about 570 people to more than 1,100 in the past eight months) has opened up a variety of new career opportunities for both her and her husband. She also received a generous relocation package that included house-selling and home-buying assistance.

Not everyone is so fortunate. While some executive relocation packages are becoming more competitive, a growing number of early-career information technology professionals are finding themselves in a less enviable position.

These hands-on technical workers — often recruited straight out of college or transferred after a year or two of work experience — are given nothing more than "the price of the U-Haul trailer and a night in a hotel en route,"

says Jan Nelson, director of strategic intelligence at Mobility Services International Inc., a Newburyport, Mass.-based company that provides employee relocation services to Fortune 500 companies and government agencies. These professionals are expected to move, settle in and be productive from Day 1. "IT people often get caught in that — more than any other group in corporations," Nelson says.

In other words: If you're an IT professional — no matter what your level — don't get too comfortable.

Blame it on the current merger and acquisition frenzy. Blame the project nature of IT work. You can even blame it on the tight labor and skills market, which is forcing companies to build offices in locations where they hope to find more available talent. But pointing fingers won't change the fact that you may be asked to relocate at some stage in your career.

READY, SET, GO!

The U.S. has the most mobile society in the world, according to the Employee Relocation Council, a nonprofit professional membership

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MOVING TARGETS

CONTINUED FROM PAGE 35

organization in Washington. Last year alone, corporations transferred more than 900,000 employees.

It's hard to say just how many of those people held IT positions. What seems evident, however, is that the number of IT people transferring is on the rise.

"Over the past three years, the volume of technical people relocating around the U.S. has been up between 10% and 12%," Nelson says. A report last year by Rauscher International, a Portsmouth, N.H.-based management consulting firm, confirms her observations. Of the 65 organizations surveyed, 56% said they transferred "engineers/scientists" (including IT pros), compared with only 44% the year before.

For people such as Matthews, a transfer can be a largely positive experience. Her husband had just resigned from a job doing presales and technical support for a Sun sales office in Phoenix. That "made the decision-making process a whole lot simpler," she says. Very quickly, he landed a job as the quality manager at Surta's alternative workplace technology group—thanks in part to other Sun employees who "went out of their way to find opportunities for him," Matthews says.

Matthews also has found much to like about her new home. "We're getting into winter now, and I've always liked cold weather and the change of seasons," she says. She goes cross-country skiing, and her older children snowboard. The family has an acre of land a reasonable distance from work, something that wouldn't have been affordable in Phoenix. And when they do suffer from the inevitable bouts of homesickness, at least they're in good

company. "There are a lot of people who have relocated, so there is always someone to commiserate with," Matthews says.

But for others, such a move comes with a host of additional challenges. The growing number of people who rent their homes and are being transferred for short-term projects represents "a big problem," says Nelson, whose company has been in the relocation industry for the past 17 years.

Renters don't offer fast commission checks to real estate people, so they receive a lot less assistance. Essentially, they're left to fend for themselves in their new locale—knowing they'll probably have to do it all over again in just 12 to 24 months.

What's more, these project workers tend to receive little notice. "There will be some huge systems problem in a city in another state, and they have to be there immediately," Nelson explains. And when that happens, "the family is left to tie up the loose ends at the origin city, and the spouse [who often has to leave his or her job] gets stuck with making all the arrangements when they move because of the urgency of the IT jobs. That's the downside of being an IT transferee."

THE UPSIDE

Of course, that's not to paint too bleak a picture. If you're a high-tech superstar, a business technologist, have a hot skill (anything to do with, say, electronic commerce) and you're also a sharp negotiator, you may be able to arrange for a generous relocation package.

Thanks largely to the tight labor market, nearly 80% of companies are using relocation assistance as a re-

cruiting tool, according to a survey by the Employee Relocation Council. In addition, 45% have increased their relocation assistance to new hires.

Meanwhile, in a reverse trend of sorts, some large companies are building offices in new locations in order to tap in to additional markets of engineers and actually reduce the number of people who have to relocate.

"With the way the employment market is right now, we're not saying people have to move to keep their jobs," says Paul Lesser, director of staffing at Fidelity Investments in Boston.

The company has expanded from one to four locations in the region, which "gives technically skilled employees the opportunity to work close to home," Lesser said.

Sun is building a \$250 million engineering complex in Burlington, Mass., in part because the Boston area boasts a large concentration of Unix engineers. In addition to hiring locally, Sun hopes to open up opportunities for its existing Massachusetts employees.

"One thing that has been nice about expanding on the East Coast is that it gives people a chance for a career here without moving to the [San Francisco] Bay area. It gives them the chance to not have to relocate," says Cathy Welsh, Sun's director of human resources. For all its charms, the Bay area is one of the most expensive and crowded regions in the country (see story below).

For Matthews, the realities of relocation are just beginning to sink in. "It has only been over the last couple of months that I've been freaked out at all," she says. "I have probably been too busy until now."

Engler is a freelance writer in Arlington, Mass.

RELOCATION RECOMMENDATIONS

If you're one of the nearly 1 million people who'll be asked to relocate this year, you should consider the following:

EXPECT THE WORST

"Everything takes more time than you think it will," says San Microsystems' Gail Matthews, who relocated from Phoenix to Lafayette, Colo., within three months. "We had a lot of things to get done in a very short period of time and they didn't all get done."

HOME FOR THE HOLIDAYS

"Do not move right before the holidays," warns Matthews, who moved in November. Her husband has a large family in Arizona, and the first Thanksgiving and Christmas were very difficult.

They could have moved two months later, but they chose not to. "We were concerned about moving in January and moving in a snowstorm," she says, "but we moved in November—and we moved in a snowstorm. We could have saved ourselves some trouble."

MOUSE PAD TRAVELING

If your company doesn't give you the information you need to get acquainted with your new home, or even if it does, the Internet can help. Check out the following resources. They'll help you make yourself at home.

THE RELOCATION JOURNAL

www.relocationjournal.com
Written for corporate human resources professionals and transferees, this online publication posts cost-of-living information and more.

EMPLOYEE RELOCATION COUNCIL

www.erc.org
Relocation trends, industry publications and events.

VIRTUAL RELOCATION

www.virtualrelocation.com
Compare your new destination with your old one.

SCHMOOZING THE NEW LOCALE

San Microsystems had several reasons for opening offices in Burlington, Mass., and Brunswick, Colo., says Cathy Welsh, director of human resources at the Mountain View, Calif.-based company.

First, it reasoned that, being a global company, it needed to be more geographically diverse. Second, it wanted to tap new markets for engineers. And third, the San Francisco Bay area is leveling at the moment.

With the average market value of a median home up to \$243,000, the Bay area is one of

the most expensive residential real estate markets in the country, according to Portsmouth, N.H.-based Rauscher International. It's also one of the most crowded.

Four years ago, San Francisco was rated the third-most congested city in the nation, with the third-longest traffic delays, according to the Texas Transportation Institute. It's hard to imagine that situation has improved. But even under the best of circumstances, setting up shop in a new city can be daunting. Locals often worry about construction, rising real

estate prices and traffic congestion—and with good reason.

In many high-tech cities, "the price of labor and rent or construction reaches a point where smaller, lower-tech companies can't afford to stay," says Chris Engle, director of research at Anguiano Economic Advisors, an Austin, Texas-based economic consulting firm that specializes in the technology industry.

In Austin, for example, "home prices are going up, so is the general cost of living, [and] people are coming to town and realizing that it's not quite as inexpensive as they are told."

Those fears certainly apply to Boston, where the average market value of a home already has soared to \$204,300. When Sun announced it would move 1,700 employees to the new Burlington campus, some residents and businesspeople balked.

What they didn't realize, Welsh says, is that more than 1,000 employees were already in Cheshire, Mass., eight miles away, and Sun hopes to hire the remaining employees locally.

To appease local residents and officials, Sun contributed land so that the town could build a road called Network Drive, which provides better access to Sun's offices and flows

business and retailing traffic away from a residential area. It's even taking steps to allay existing employees' concerns about the longer commutes. Sun has locked into telecommunications, flextime, van pooling and providing vaccinations and phones in the old Cheshire location to allow employees to use them in the morning until traffic calms down. And because Sun was building on wasteland, it made concessions to the town of Burlington's Conservation Commission. It's made a portion of the land available to the public and built walking paths for residents. "There are always places like that," Welsh says.

—Natalie Engler

SKILLS SCOPE

Data warehousing and data mining

Data in, opportunities out

By Fawn Fitter

The ideal data mining experts are technologically savvy and understand databases. But they're also comfortable and familiar with statistics and business and have a much broader business perspective than most IT positions allow, says Howard Dresner, a research director at international consulting firm Gartner Group Inc. in Stamford, Conn., who specializes in helping clients set up their own data mining systems.

Currently, most information technology jobs in this field are supporting rather than starring roles. But that means there are more opportunities to break in. Todd Swift, a partner at consulting giant Ernst & Young LLP and its national director of data warehousing solutions for SAP, sorts those supporting players into the following four key roles:

RAPID APPLICATION DEVELOPMENT:

If you've built a complex Web site or put together a graphical user interface, you can move into data warehousing and data mining by building front-end interfaces that allow end users — executives and managers — to access warehouse data in a meaningful way. These jobs call for IT pros with strong Visual Basic, PowerBuilder, client/server and Web-based programming skills, as well as the ability to figure out what the end user wants and match it with tools available on the market, says Dave Buch, IT director at Capital One Bank in Falls Church, Va.

TECHNICAL ARCHITECTURE:

Buch builds a technical infrastructure that allows high-volume access to warehouse data focusing on analysis and reporting, not transaction processing. Those jobs tend to be at outside contractors rather than end-user companies, although they may be in-house at businesses where data warehousing is

Combining tech skills and business savvy, data warehousing pros are in high demand

central to the business. Because Capital One has a huge data warehouses and many sophisticated users accessing it, Buch looks for employees who have experience with databases holding as much as 1T byte of raw data but who also have a mainframe or Unix background. They may be required to extract data from legacy systems and apply new technology to it.

CONVERSION AND TRANSFORMATION:

IT professionals with these skills design and implement the process of standardizing and conforming information from disparate systems. This category includes the administrator who maintains the data warehouse, figures out how and how much to index the data, summarizes the data and builds aggregates. "The data mining software isn't smart enough to determine which variables are important, so part of the job is to take the stored data and add derived data based on what's there. Then you start being able to see interesting patterns," says Michael Berry, co-author of *Data Mining Techniques: For Marketing, Sales, and Customer Support* (John Wiley & Sons Inc., New York, 1997). Once you learn to use the application software involved, expect to demand a high salary and develop a certain amount of expertise in the data itself. The next step is project management.

SUBJECT MATTER EXPERTISE:

Typically, this is a job for a project manager who combines business and technical savvy to help end users get the most out of the data. The project manager builds specific data models — especially for specific business or performance management reports — and may be called upon to suggest ways to act on the results. Project managers can command salaries that reach into the low six figures, independent consultants report charging \$1,000 per day and up.

Because this position offers an overview of both technical and business issues, it can lead to the executive level or consulting.

Fitter is a freelance writer in Arlington, Mass.

Paths to success in data warehousing

Figuring out how to squeeze competitive advantages out of the millions of bytes of data that companies collect every day offers IT professionals career opportunities in the relatively new fields of data warehousing and data mining.

Briefly explained, data warehousing consolidates information from many sources into a useful form for analysis and strategic decisions. Data mining is a way to use warehouse data by using advanced algorithms to interpret and glean insight from it. In the financial services industry, for example, sophisticated networks trained to recognize the hallmarks of a fraudulent transaction sort through a deluge of incoming data to try to pick out fraud as it happens. In a more everyday context, supermarkets target their marketing based on databases of customer purchasing patterns and preferences built through affinity cards.

SKILLS AND CAREER POTENTIAL:

Data warehousing and data mining require information technology professionals with experience in SAP and PeopleSoft database administration and support, connectivity, installation and troubleshooting, and business intelligence software support.

Also helpful is the ability to integrate internal and external data from several different platforms into a single form that makes sense. Because of the necessary jobs are interconnected, it's possible — and even preferable — to move from one to another as long as you have a broad range of skills. "The skills themselves are not incredibly unique. It's the combination of skills and the ability to deal with very large databases that makes people valuable," says Dave Buch, IT director in charge of data warehouse strategy at Capital One Bank.

"This is a very hot market right now, and I don't see a real end to it. I think we're just in the infancy of people understanding what data warehousing is and what its value is," Buch says. "Good, quality, experienced people in this business are still hard to find. And they command top-dollar IT salaries across the board — management and technology alike."

According to Kevin Strange, research director at Gartner Group's strategic data management group, the right job blending technology and business savvy could lead to a job as head of the IT department — or even CIO.

HOW TO GET TRAINING AND GET STARTED:

Start with a quick search of books in print, and you'll find more than two dozen books about data warehousing. Conferences and trade shows will offer opportunities to meet vendors and users alike, as well as a chance to get to know the issues.

But the best way to get started is to "join a company that already has experience and learn alongside you with best practices," says Todd Swift, a partner at Ernst & Young and its national director of data warehousing solutions for SAP. — Fawn Fitter



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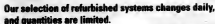
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Losers



GAINERS		LOSERS	
Company	%	Company	%
Advanced Technology Inc.	20.2	Advanced Technology Inc.	-10.0
Advanced Technology Inc.	19.5	Advanced Technology Inc.	-9.5
Advanced Technology Inc.	18.8	Advanced Technology Inc.	-9.0
Advanced Technology Inc.	18.1	Advanced Technology Inc.	-8.5
Advanced Technology Inc.	17.4	Advanced Technology Inc.	-8.0
Advanced Technology Inc.	16.7	Advanced Technology Inc.	-7.5
Advanced Technology Inc.	16.0	Advanced Technology Inc.	-7.0
Advanced Technology Inc.	15.3	Advanced Technology Inc.	-6.5
Advanced Technology Inc.	14.6	Advanced Technology Inc.	-6.0
Advanced Technology Inc.	13.9	Advanced Technology Inc.	-5.5
Advanced Technology Inc.	13.2	Advanced Technology Inc.	-5.0
Advanced Technology Inc.	12.5	Advanced Technology Inc.	-4.5
Advanced Technology Inc.	11.8	Advanced Technology Inc.	-4.0
Advanced Technology Inc.	11.1	Advanced Technology Inc.	-3.5
Advanced Technology Inc.	10.4	Advanced Technology Inc.	-3.0
Advanced Technology Inc.	9.7	Advanced Technology Inc.	-2.5
Advanced Technology Inc.	9.0	Advanced Technology Inc.	-2.0
Advanced Technology Inc.	8.3	Advanced Technology Inc.	-1.5
Advanced Technology Inc.	7.6	Advanced Technology Inc.	-1.0
Advanced Technology Inc.	6.9	Advanced Technology Inc.	-0.5
Advanced Technology Inc.	6.2	Advanced Technology Inc.	0.0
Advanced Technology Inc.	5.5	Advanced Technology Inc.	0.5
Advanced Technology Inc.	4.8	Advanced Technology Inc.	1.0
Advanced Technology Inc.	4.1	Advanced Technology Inc.	1.5
Advanced Technology Inc.	3.4	Advanced Technology Inc.	2.0
Advanced Technology Inc.	2.7	Advanced Technology Inc.	2.5
Advanced Technology Inc.	2.0	Advanced Technology Inc.	3.0
Advanced Technology Inc.	1.3	Advanced Technology Inc.	3.5
Advanced Technology Inc.	0.6	Advanced Technology Inc.	4.0
Advanced Technology Inc.	-0.1	Advanced Technology Inc.	4.5
Advanced Technology Inc.	-0.8	Advanced Technology Inc.	5.0
Advanced Technology Inc.	-1.5	Advanced Technology Inc.	5.5
Advanced Technology Inc.	-2.2	Advanced Technology Inc.	6.0
Advanced Technology Inc.	-2.9	Advanced Technology Inc.	6.5
Advanced Technology Inc.	-3.6	Advanced Technology Inc.	7.0
Advanced Technology Inc.	-4.3	Advanced Technology Inc.	7.5
Advanced Technology Inc.	-5.0	Advanced Technology Inc.	8.0
Advanced Technology Inc.	-5.7	Advanced Technology Inc.	8.5
Advanced Technology Inc.	-6.4	Advanced Technology Inc.	9.0
Advanced Technology Inc.	-7.1	Advanced Technology Inc.	9.5
Advanced Technology Inc.	-7.8	Advanced Technology Inc.	10.0
Advanced Technology Inc.	-8.5	Advanced Technology Inc.	10.5
Advanced Technology Inc.	-9.2	Advanced Technology Inc.	11.0
Advanced Technology Inc.	-9.9	Advanced Technology Inc.	11.5
Advanced Technology Inc.	-10.6	Advanced Technology Inc.	12.0
Advanced Technology Inc.	-11.3	Advanced Technology Inc.	12.5
Advanced Technology Inc.	-12.0	Advanced Technology Inc.	13.0
Advanced Technology Inc.	-12.7	Advanced Technology Inc.	13.5
Advanced Technology Inc.	-13.4	Advanced Technology Inc.	14.0
Advanced Technology Inc.	-14.1	Advanced Technology Inc.	14.5
Advanced Technology Inc.	-14.8	Advanced Technology Inc.	15.0
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Advanced Technology Inc.	-16.9	Advanced Technology Inc.	16.5
Advanced Technology Inc.	-17.6	Advanced Technology Inc.	17.0
Advanced Technology Inc.	-18.3	Advanced Technology Inc.	17.5
Advanced Technology Inc.	-19.0	Advanced Technology Inc.	18.0
Advanced Technology Inc.	-19.7	Advanced Technology Inc.	18.5
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Advanced Technology Inc.	-21.8	Advanced Technology Inc.	20.0
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Advanced Technology Inc.	-28.8	Advanced Technology Inc.	25.0
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Advanced Technology Inc.	-40.7	Advanced Technology Inc.	33.5
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Advanced Technology Inc.	-77.8	Advanced Technology Inc.	60.0
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Advanced Technology Inc.	-110.7	Advanced Technology Inc.	83.5
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Advanced Technology Inc.	-117.7	Advanced Technology Inc.	88.5
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Advanced Technology Inc.	-131.0	Advanced Technology Inc.	98.0
Advanced Technology Inc.	-131.7	Advanced Technology Inc.	98.5
Advanced Technology Inc.	-132.4	Advanced Technology Inc.	99.0
Advanced Technology Inc.	-133.1	Advanced Technology Inc.	99.5
Advanced Technology Inc.	-133.8	Advanced Technology Inc.	100.0

INDUSTRY ALMANAC

Microns on the move

Memory maker Micron Technology Inc. and its PC maker subsidiary Micron Electronics Inc. are a pair of hot potatoes from Idaho. Each set 50-week highs last week. Micron Technology in Boise (NYSE: MU) climbed from 23 1/4 points per share on June 4 to 45 3/4 on Nov. 4. Meanwhile, Micron Electronics in Hampa (NASDAQ: MUEI) rose from about 13 per share at the beginning of June to 24 1/4 on Nov. 4.

There's little consensus among analysts about how bright the companies' futures will be, but they all agree earnings will rise in years to come.

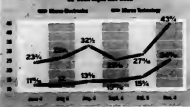
For its first ending last August, 66 analysts averaged by First Call Corp. in Boston predicted that Micron Technology will lose 10 cents per share. The estimates ranged from losses of 50 cents per share to profits of \$1 per share. For the following year, analysts predicted an average profit of \$1.75 per share, with a range anywhere from a loss of 5 cents to a profit of \$6.66.

David T. Miles, managing director at Burschtien Burschtien Stephens Co. in San Francisco, notes Micron Technology is a strong Buy. His reasoning: The huge costs of memory supply over demand that has wrecked memory makers has begun to subside. Industry capital expenditures are dropping as demand for memory in PCs increases. Micron's position in the aftermath of the heavy losses is strong. Asian companies face tight credit at home, but Micron has investments totaling nearly \$1 billion from Intel Corp. and Texas Instruments Inc.

Micron Electronics is priced as reasonable, Miles says, largely because of Jack Kachar, the former Dell Computer Corp. president who became Micron's president in January. Kachar has whipped Micron's direct sales model into shape. Inventories have been cut on 40 days' worth to 10. — David Croteau

HOT POTATOES

Micron Technology and Micron Electronics each hit 52-week highs last week.



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Flexible licensing models

CONTINUED FROM PAGE 1

hardware, move software from one platform to another or expand the use of a particular product without incurring steep license-charge increases. Under the usage or capacity models that exist today, users typically would have to buy new licenses or upgrade existing ones when upgrading hardware or moving to different platforms.

There are caveats to the new schemes, however. Much of the pricing is based on long-term assumptions about the kind of platforms on which the software will run. Users could end up getting locked into costly schemes if they don't fully understand the formulas on which the pricing is based. And the points schemes may make sense only in large multipoint environments, where information technology managers expect to move to different hardware platforms.

The new pricing models reveal how software vendors finally may be responding to growing user frustration over the current license schemes, said Patricia Cicala, an analyst at Gartner Group Inc. in Stamford, Conn. (CW, Oct. 5).

"Software vendors have been using mainframes like cash cows.... Over the long term, they are discovering there is no more cash to milk," said James Moser, manager of technical services at Duquesne Light Co. in Pittsburgh. The utility is ripping out one vendor's software because the vendor is refusing to negotiate on prices.

Efforts such as those by BMC and Candie could have a ripple effect, Cicala said. The new pricing model "may be complicated to develop and agree upon, but they are very flexible once you start living within it," she said.

Under Candie's, so-called Point Pricing scheme, will be launched in January, companies

earn a certain amount of "licensed points" that are tied to the dollar value of their software purchases.

For instance, at \$600 for one point, a software purchase of \$500,000 would be worth 500 points. The customer then is free to apply the points in moving the vendor's software from one platform to another (such as from an OS/390 mainframe to Unix systems), from one location to another or, in some cases, even to buy new products from a designated suite.

CASE STUDY

Here's how it would work for a company purchasing a three-year, \$1 million software license to run an enterprise resource planning application:

The company using the software on a 500-MIPS mainframe and 35 small Unix servers might earn 1,000 licensed points. The software running on the mainframe might be worth 500 points, while software on each Unix server would be worth 20 points.

Under the point scheme, if customers migrate off the mainframe to an all-Unix environment, there would be no additional license charge as long as the company didn't use Unix servers worth more than 1,000 points.

Under most software licensing schemes, a user would have to buy new licenses to migrate from the mainframe to Unix systems.

With this kind of points system, "the primary [advantage] is flexibility and predictability," said Kevin Berry, a contracts manager at Norwest Services Inc. in Minneapolis, which recently entered into a points licensing agreement with Candie. "The most difficult part in constructing an enterprise license agreement with medium- to long-term commitments is determining which products you will truly need and the amount of processing capacity it will reside on."

BMC's Value Licensing Agreement, which the company has been offering users since August, is aimed at the distributed computing market. It's similar to the Candie scheme but takes a slightly different approach in calculating the points — known as value units in BMC terms.

Each hardware platform has a preassigned value unit attached to it. For instance, a Unix server may have a value unit of 20, whereas a Windows NT server may have a value unit of 5.

The value units' total depends on the aggregate amount of hardware that a user estimates will be needed to run an application. Software running on two Unix servers and two NT

servers might have a value unit of 50. The units then can be applied in much the same way as Candie's points system.

Whether the system will benefit users depends on the formulas that vendors use to assign points or value units to systems, said Roland Akosah, a senior asset analyst at the Student Loan Marketing Association, also known as Sallie Mae, in Reston, Va.

Sallie Mae, which this year will spend \$5 million on mainframe software licenses, recently moved some of its database licenses to a new usage-based

scheme announced by IBM. The move — which will save the association about \$500,000 this year — made sense to Sallie Mae officials because the association knows exactly how much it used the database.

But the new pricing models from BMC and Candie involve paying for software up front, based on an estimate of the hardware needed, Akosah said. "The real challenge is in figuring out on what basis the vendors are calculating points or value units and then seeing if you can derive better value by moving to it," Akosah said. □

Value-based plan

CONTINUED FROM PAGE 1

number of users who are paid for under user-based contracts. But some users suspect that it also can be a way for vendors to get at more of their money.

PeopleSoft Inc. and 1a Technologies Inc. have been pushing value-based pricing models for more than a year. Now, rivals such as SAP AG, Baan Co. and J.D. Edwards & Co. are flirting with the idea as an alternative to license fees based on the number of users given access to an application.

TRADE-OFF WORTH IT

Some information technology executives who have signed value-based deals said they can live with the prospect of extra payments in return for not having to worry about how many users are tapping into their enterprise resource planning (ERP) systems. User-based licensing is getting more complex as applications are opened up to employees who use the software infrequently, they said.

Others, though, are throwing value-based proposals right back in the faces of their vendors. For example, SAP confirmed that it backed away from incorporating value-based pricing into the cost of its new data warehouse software after a half-dozen R/I customers complained about the idea.

Amoco Corp. was one of those customers. Steven Grossman, manager of SAP implementations at the \$31 billion oil and gas producer, said SAP sent up trial balloons about tying the price of the Business Information Warehouse software to Amoco's revenue or to the number of barrels of oil it ships.

But executives at Chicago-based Amoco viewed that as an attempt by SAP "to find a cre-

ative way to extract greater revenues from its installed base," Grossman said. Amoco didn't like the idea of paying more to SAP just because business happens to improve, he added.

Even PeopleSoft users are being value-based contracts aren't entirely thrilled by the concept.

"We call it escalation pricing," said Robby Shay, director of IT at American Century Investments in Kansas City, Mo. "It might be more fair if they shared in the downside if you [had] a bad year, but it doesn't seem to work that way."

Users who do a better job than other customers of exploiting the software "are going to pay more than their fair share" as a reward, added Eric Bus, chief accounting officer at American Century.

The mutual funds company got the last user-based deal that PeopleSoft handed out on its financial applications, but the

contract has since been pegged to American Century's revenue. American Century has learned to live with the idea, Bus said. "We had our say [with PeopleSoft], and then we moved on."

PeopleSoft officials said buyers can be pricing to the performance or head count of business units if the software is being used by only part of a company. "We're not trying to gouge people," said CEO Dave Duffield. "We're just trying to make it easy for the customers." Jim Prev, CIO at Green Mountain Coffee Inc. in Waterbury, Vt., was won over after initially showing some skepticism. PeopleSoft's up-front price was higher than user-based rival bids, he said, but it was projected to be a better deal over three years because the coffee maker could add more users without buying extra seats.

And because Green Mountain Coffee's revenue has to grow tenfold to trigger an extra fee to PeopleSoft, "we have a long way to go before we have to go back and give them another nickel," Prev said.

Despite its experience with the Business Information Warehouse customers, SAP said it is still considering using value-based pricing with some of the new business planning and front-office applications that are being developed as companions to the German company's flagship R/I software.

Baan and J.D. Edwards also said they are trading lightly and proposing value-based pricing only for certain products or customers. ERP rivals Oracle Corp. and Lawson Software Inc. continue to price strictly on a per-user basis. "We've surveyed customers on this, and they [have] sent us very clear signals that they don't want to [switch]," said Mark Galloway, vice president of strategic planning at Lawson. □

Pay me now, and maybe later

How PeopleSoft's value-based software pricing works

- 1 Buyer pays price to head count, revenue or another metric
- 2 Baseline license fee and growth triggers are negotiated
- 3 PeopleSoft monitors buyer's annual reports or SEC filings
- 4 Extra license fee is charged if growth trigger is exceeded
- 5 Added payment comes due with next annual maintenance bill

The Back Page

alt.cw

Disparages messages from the ringers of the electronic frontier

BUT WILL GUYS USE THE MAP?

MapQuest is a Web site that celebrates low-budget flicks. The *Bovary Boys* comedy series to *Night of the Living Dead*, Edward D. Wood Jr.'s *Plan 9 from Outer Space* and John Waters' *Pink Flamingos*.

Recent developments in radar technology make it very likely that the average consumer will own a personal radar system in the near future, says a report by Technical Insights (www.techinsights.com). Low-cost, low-power radar sensors will be used for tasks such as finding a stud in a wall, checking a car's oil and getting real-time traffic information, according to the report.

Concerned that students are playing computer games instead of studying and exercising, cultural officials in China's capital city of Beijing have banned computer games at recreation and training centers and Internet cafes, says services report. The Beijing ban also is intended as a crackdown on facilities that use pirated game software.

Putting the 'why?' in Y2K

Elegant Headwear Co. in Elizabeth, N.J., claims to be the first company to offer a baseball cap with a digital LCD display that counts the hours, minutes and seconds left until year 2000.

It will beep one minute before the big moment and flash "Happy 2000" a minute later. And then it won't do anything. Hmmm.



How to ponder

Movie Theater (www.b-movie.com), a Web site that celebrates low-budget flicks, has announced the first inductees into the B-Movie Hall of Fame. The list ranges from *The Beverly Hills Cop* series to *Night of the Living Dead*, Edward D. Wood Jr.'s *Plan 9 from Outer Space* and John Waters' *Pink Flamingos*.

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THE FIFTH WAVE by Rick Trenton



"We're concerned," says Auntie, "that you seem to be able to talk to the other children."

Inside Lines

Taking it to the streets

An RV parked outside the Mezzano Center in San Francisco last week was adorned with banners promoting a \$100,000 signing bonus to attendees of PeopleSoft's user conferences who felt the exploring other options. The van belonged to The Harris Group, a Chicago-based company that puts together teams of IT workers that are then sold off to corporate clients or consulting firms. One catch, though: An attendee who stopped inside said he was told the signing bonus is actually paid out over three years.

We say 2 to 1 Judge Jackson nods off

As the Microsoft antitrust trial goes along, it's only natural that Las Vegas bookies are taking odds on the outcome of the case — or, case. As of last week, Microsoft Chairman and CEO Bill Gates was favored to win the government case 7 to 5, according to one Internet gambling site. That odds is favor of a five against Microsoft were running 3 to 1.

No, that's "incomprehensible pain"

U.S. vs. Microsoft is more than a legal battle. It's a clash of cultures. The gap between the technology and legal professions was particularly glaring during last week's cross-examination of *Arlo Toresian*, Apple's senior vice president of software development. After explaining the formats, protocols, compression technologies and other technical terms and concepts, Toresian burst out: "I'm sorry for all this technical jargon — I've heard all this legal jargon lately." But the explanation was necessary. At one point, Microsoft attorney Theodore Kolman asked Toresian what "IP" meant. "Intellectual property?" he asked.

Bum Manner Clinics

IT vendors are blaming weak quarterly earnings on everything from economic turmoil in Asia to shifts in corporate spending because of year 2000 projects. But there's more to the story for credibility with its claims that part of its \$9.7 million third-quarter loss was because corporate executives were distracted by the fallout of President Clinton's affair with Monica Lewinsky. Says AMR Research analyst Bruce Richardson: "Give me a break — that's the dumbest thing I ever heard."

Overboard

An attendee at the Data Warehousing Institute conference last week in Orlando, Fla.: "Web, a Magic 8-Ball — the original OLAP?..." A technical session presenter at last week's Embedded Systems Conference in San Jose, Calif.: "If they told me the plane was running on Windows CE, I would get out on that plane."... PeopleSoft CEO Dave Duffield, announcing extended support for older PeopleSoft releases: "That is a pretty big deal. A very expensive big deal, I might add. But we're cash-rich."

Bummer still

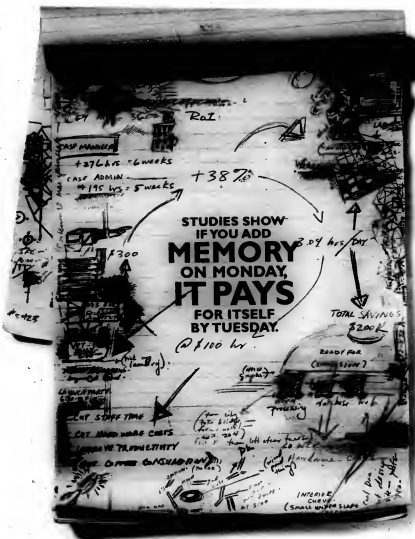
Hotsteps this week will announce BillerQuest, a system for dialing and collecting calls electronically over the Internet. One by the middle of next year, it will carry a \$200,000 price tag. ... Computech Systems in Boulder, Colo., this week will ship its \$5,995 InterGuard Zero-Configuration Firewall, designed for remote branch offices and wireless networks.

America Online snugged a supporting role in *You've Got Mail*, the Tom Hanks-Meg Ryan romantic comedy that opens next month. In the movie, Hanks and Ryan play rival New York booksellers who frequent the same haunts every day but meet only via their AOL accounts. America Online officials said they worked with the film's producers to recreate the AOL experience as realistically as possible. Could this be the year a busy signal runs off with the Oscar for best performance? News editor Patricia Keefe keeps her line open for your own tips and tidbits. Call her at (508) 820-8843, or send E-mail to patricia_keefe@aol.com.

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